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March 1988
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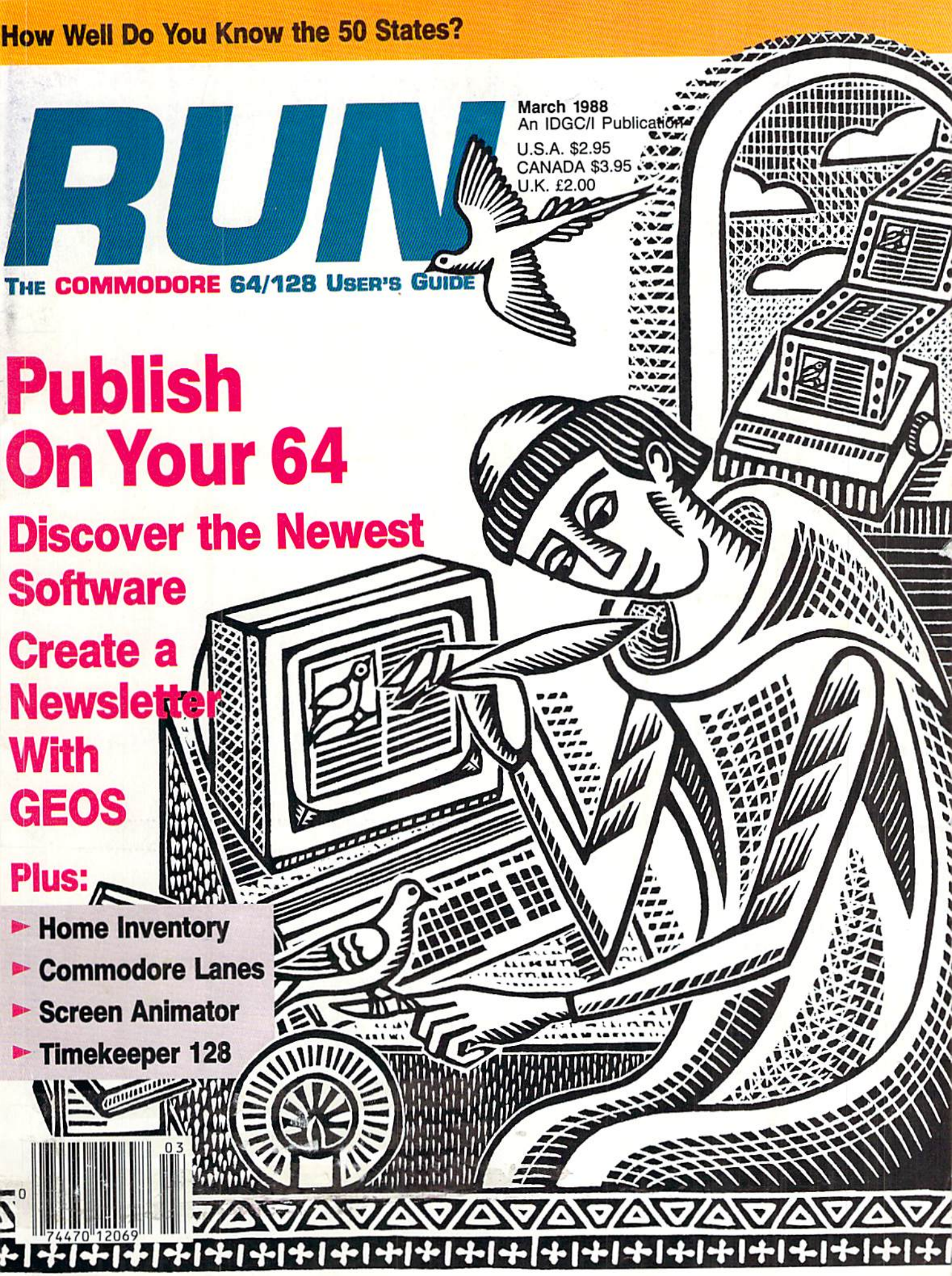

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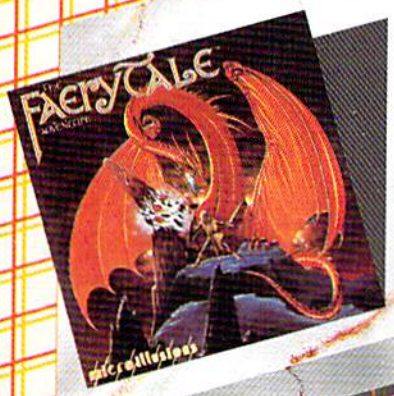

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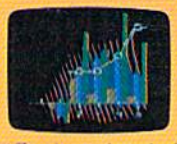

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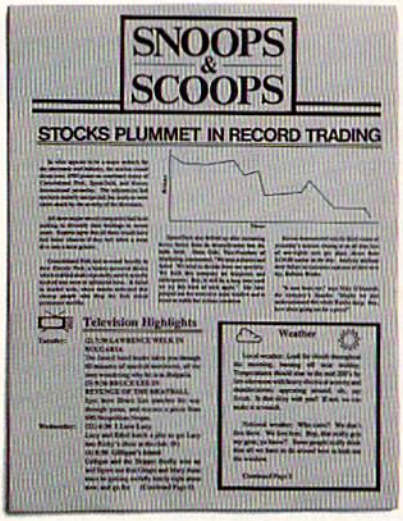


SNOOPS & SCOOPS

STOCKS PLUMMET IN RECORD TRADING

Television Highlights

Weather

ED'S WEEKLY

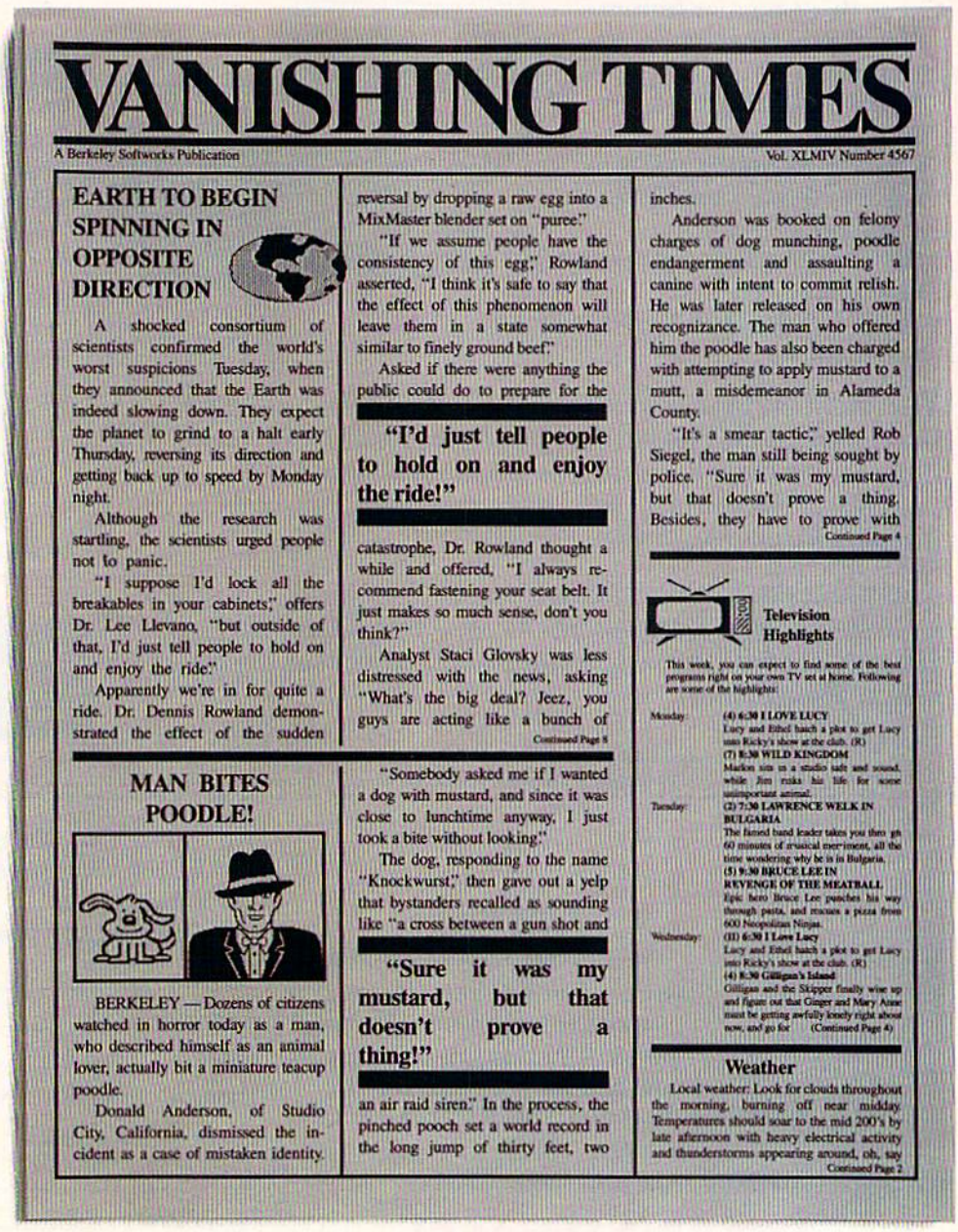
The views and news of Ed.

December 3

Escaping In The Beauty of Andorra

Weather

More people reading stuff like this!



VANISHING TIMES

A Berkeley Softworks Publication

Vol. XLMIV Number 4567

EARTH TO BEGIN SPINNING IN OPPOSITE DIRECTION

A shocked consortium of scientists confirmed the world's worst suspicions Tuesday, when they announced that the Earth was indeed slowing down. They expect the planet to grind to a halt early Thursday, reversing its direction and getting back up to speed by Monday night.

Although the research was startling, the scientists urged people not to panic.

"I suppose I'd lock all the breakables in your cabinets," offers Dr. Lee Llevano, "but outside of that, I'd just tell people to hold on and enjoy the ride."

Apparently we're in for quite a ride. Dr. Dennis Rowland demonstrated the effect of the sudden reversal by dropping a raw egg into a MixMaster blender set on "puree."

"If we assume people have the consistency of this egg," Rowland asserted, "I think it's safe to say that the effect of this phenomenon will leave them in a state somewhat similar to finely ground beef."

Asked if there were anything the public could do to prepare for the catastrophe, Dr. Rowland thought a while and offered, "I always recommend fastening your seat belt. It just makes so much sense, don't you think?"

"I'd just tell people to hold on and enjoy the ride!"

Analyst Staci Glovsky was less distressed with the news, asking "What's the big deal? Jeez, you guys are acting like a bunch of

Continued Page 8

MAN BITES POODLE!

BERKELEY — Dozens of citizens watched in horror today as a man, who described himself as an animal lover, actually bit a miniature teacup poodle.

Donald Anderson, of Studio City, California, dismissed the incident as a case of mistaken identity.

"Somebody asked me if I wanted a dog with mustard, and since it was close to lunchtime anyway, I just took a bite without looking."

The dog, responding to the name "Knockwurst," then gave out a yelp that bystanders recalled as sounding like "a cross between a gun shot and an air raid siren." In the process, the pinched pooch set a world record in the long jump of thirty feet, two inches.

"Sure it was my mustard, but that doesn't prove a thing!"

Anderson was booked on felony charges of dog munching, poodle endangerment and assaulting a canine with intent to commit relish. He was later released on his own recognizance. The man who offered him the poodle has also been charged with attempting to apply mustard to a mutt, a misdemeanor in Alameda County.

"It's a smear tactic," yelled Rob Siegel, the man still being sought by police. "Sure it was my mustard, but that doesn't prove a thing. Besides, they have to prove with

Continued Page 4

Television Highlights

This week, you can expect to find some of the best programs right on your own TV set at home. Following are some of the highlights:

Monday:
(4) 6:30 I LOVE LUCY
Lucy and Ethel hatch a plot to get Lucy into Ricky's show at the club. (R)
(7) 8:30 WILD KINGDOM
Marlon sits in a studio safe and sound, while Jim risks his life for some unimportant animal.

Tuesday:
(2) 7:30 LAWRENCE WELK IN BULGARIA
The famed band leader takes you then go 60 minutes of musical merriment, all the time wondering why he is in Bulgaria.
(5) 9:30 BRUCE LEE IN REVENGE OF THE MEATBALL
Epic hero Bruce Lee punches his way through pasta, and rescues a pizza from 600 Neopolitan Ninjas.

Wednesday:
(11) 6:30 I Love Lucy
Lucy and Ethel hatch a plot to get Lucy into Ricky's show at the club. (R)
(4) 8:30 Gilligan's Island
Gilligan and the Skipper finally wise up and figure out that Ginger and Mary Anne must be getting awfully lonely right about now, and go for

(Continued Page 4)

Weather

Local weather: Look for clouds throughout the morning, burning off near midday. Temperatures should soar to the mid 200's by late afternoon with heavy electrical activity and thunderstorms appearing around, oh, say

Continued Page 2

Text can be printed in every font available through GEOS. These documents were printed on an Apple Laser Writer

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GE NEWS.

These days, the biggest story in the news is geoPublish. The page-making program for GEOS-equipped 64's and 128's that replaces lifeless layouts with page after page of powerful, punchy professionalism.

Freedom of the press.

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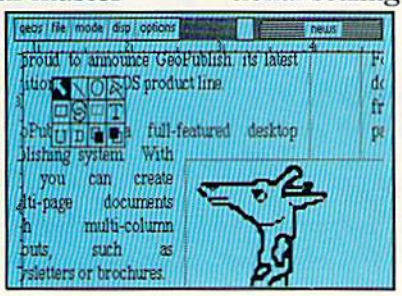

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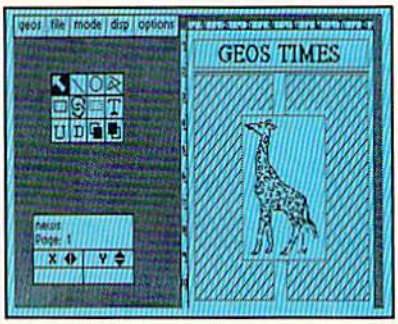

As every editor knows, even the best stories need punching up before they go to press. Which is why geoPublish features an array of artistic appliances designed to earn your pages a place in the history books.

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Finally, those of you intent on making banner headlines should know that geoPublish doesn't wimp out when it comes to headlines. It screams them out, with genuine, newspaper-sized, 96 point megafonts.

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VOLUME 5, NUMBER 3

RUN

MARCH '88

COVER ILLUSTRATION BY BETH KROMMES

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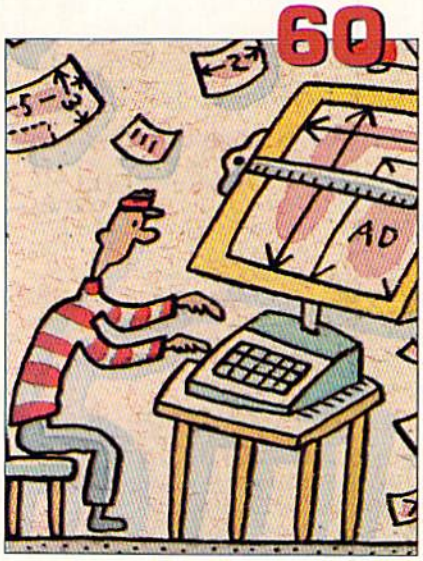

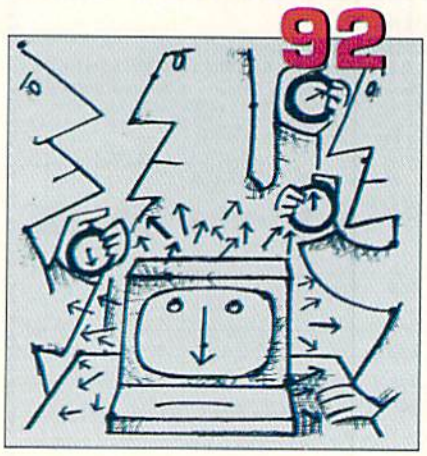

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RUNning Ruminations

When you bought your C-64, did you ever imagine that one day you would be able to do desktop publishing? Believe it!

Desktop Publishing—Boon or Bane?

Have you ever looked wistfully at the desktop publishing power of the Mac or IBM PC and wished it was available for the 64?

Those days of unfulfilled yearning by Commodore owners may be over at last with the emergence of the most current crop of desktop publishing software. The latest 64 software gives the machine capabilities that approach those of the more highly touted PCs.

Even so, the Commodore 64/128 is still a rudimentary desktop publishing machine that requires your time and patience to obtain the desired results. But, for a fraction of the cost, you can have multi-column, multi-page output, boasting a variety of font sizes and styles. Desktop publishing software takes you one step beyond word processing and allows you to liven up your documents with wraparound text, illustrations, clip art, borders and other graphics.

With a laser printer, you can produce a resolution of 300 dots per inch, which approaches professional-quality output. But, as one of our authors in this month's issue notes, if you don't need to be so fancy, then you can get by with a dot matrix printer. We suspect that for most of our readers, this is the way they will want to go—at least until the price of laser printers comes down dramatically.

Generating documents, newsletters or flyers with your C-64 affords you quick turnaround time, low production costs and minimal staff. This last point is particularly appealing. Desktop publishing allows a one-computer-user operation to produce a document that previously would have taken several specifically skilled individuals or departments to handle. As an individual computer user, you can be writer, editor, typesetter, designer, layout person, printer and publisher—all without leaving the keyboard.

There are some who might be horrified at this prospect. Putting desktop publishing in the hands of the "unskilled" is like putting a scalpel in the hands of a novice and telling him to perform brain surgery. At least this is the analogy used by one reader (a commercial artist) who wrote to me about desktop publishing.

"What desktop publishing is doing," he went on to say, "is setting a new low standard for the trade. People who have never had work professionally designed or typeset are accepting this standard (300 dpi) without anything to compare it to. I'm amazed that you, being publishers, would promote this sort of nonsense."

As publishers, we do not use desktop publishing (although there are at least two other publications in the Commodore market that are done this way). We employ artists—both in-house and on a free-lance basis—to produce our magazine each month.

As Commodore computer users, we are intrigued by this innovative new application. Occasionally, we'll use desktop publishing to spice up a report to our boss with a chart or graph or two. Or create our own greeting card or jazz up a newsletter.

It appears that the artist community (notwithstanding the commercial artist above) is embracing this new technology. Many are incorporating it into their professions, where applicable. Some graphic artists have struck out on their own to set up their own businesses using this technology. Magazines devoted to this topic feature articles about design tips, layout, fonts, the best paper or printer to use, point sizes and typefaces—written by graphic artists, desktop publishing consultants or others familiar with the subject.

Desktop publishing is also sweeping the computer industry, as industry analysts predict a booming market for this new technology that promises to enable everyone to become his or her own publisher.

As in the computer industry, special skills are required to become a publisher or an artist. So desktop publishing won't magically transform every publisher into an artist, or artist into a publisher. But it will help the non-artistic achieve results never before possible.

Desktop Publishing Contest

How does your desktop publishing output stack up against that of other Commodore users? It may be better than you think. To find out for sure, why not enter the GEOS Desktop Publishing Contest?

Berkeley Softworks, the California-based manufacturer of the GEOS operating system and applications for the C-64 and C-128, has announced its GEOS Publishing Contest, which is open to all GEOS users.

The contest offers prizes in four categories in the divisions of both dot matrix printers and laser printers. The categories are Flyer (such as one-page ads, handbills, etc.); Newsletter (multi-page brochures); Poster (of sizes 200 percent larger than the original; laser printer only); and Open Design (best new uses).

Three prizes will be awarded for each of the seven areas for a total of 21 winners. Prize winners will share in a variety of winnings, including Commodore peripherals, Berkeley Softworks' software and subscriptions to *RUN* and QuantumLink.

Over a half million people own GEOS, according to Lee Llevano, vice-president of marketing for Berkeley. "This contest is an opportunity for users to let their creativity flow and show the world some of the great work they've been doing. Because contestants can use any of their GEOS-based products, and in particular geoPublish, we're expecting some fantastic entries."

The *RUN* magazine staff will judge the entries and Berkeley Softworks will award the prizes. The contest ends June 30, 1988, and the prizes will be distributed by August 1988. For more details, see the contest announcement on page 102.

Dennis Brisson

Dennis Brisson
Editor-in-Chief

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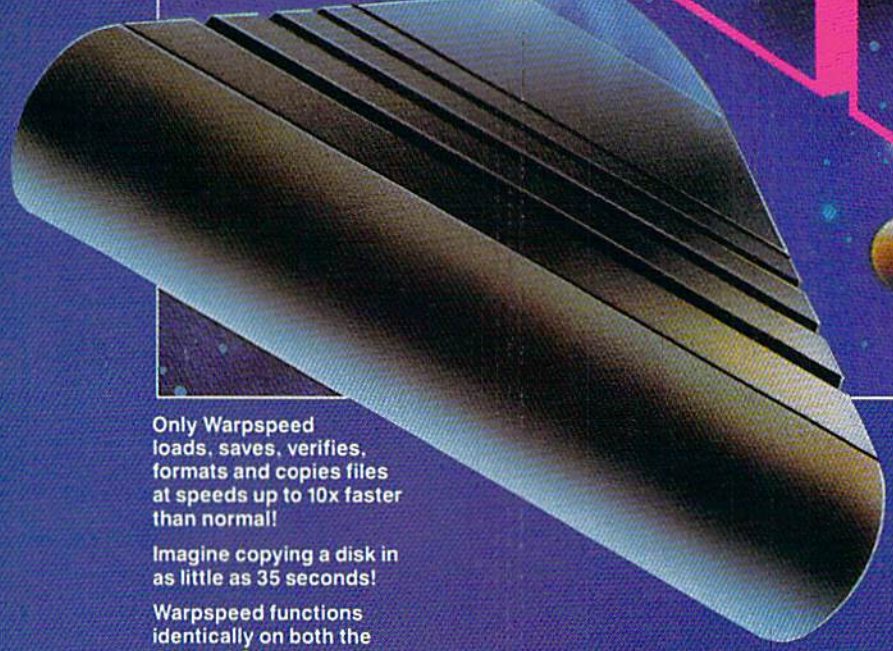

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MAGIC

Turn your Qwerty keyboard into a Dvorak layout; get a sharper, clearer picture with your 1902A; type in a high-speed, screen-scroll routine.

Compiled by TIM WALSH

$475 Bottom-Line Printer

Getting any character to print in the bottom right-most corner of your display without the screen scrolling is no small task. My trick takes care of that problem. To make the trick work in 80-Column mode, change 35 to 75 in line 20.

```
Ø REM BOTTOM LINE PRINTER - JOSEPH CHARNET
  SKI                                  :REM*11Ø
1Ø PRINT"{SHFT CLR}";:FORI=1TO24:PRINT:NEX
  T                                    :REM*43
2Ø FORJ=1TO35:PRINT"{SHFT C}";:NEXT :REM*9
3Ø PRINT"MAGC{CRSR LF}{SHFT INST}I{HOME}"
                                       :REM*152
```

—Joseph Charnetski, Dallas, PA

$476 Brilliant Borders 64

If you change the C-64's border colors fast enough, you'll get some eye-catching results. Here's an interrupt-driven program I call Brilliant Borders 64, which cycles the border colors 60 times a second without interfering with other programs. To adjust the color-cycle rate, enter POKE 56325, followed by a number between 0 and 255.

You can get even more dramatic effects to enhance menus and prompts by entering POKE 56325, 10.

```
Ø REM BRILLIANT BORDERS 64 - NATHAN JOHNSO
  N                                    :REM*171
1Ø FORI=1TO46:READA:POKE49151+I,A:NEXT
                                       :REM*222 ►
```

Trick of the Month

$477 64 High-Speed Scroll

Regardless of whether you write spreadsheets or arcade programs, you can benefit from a high-speed screen-scroll routine that doesn't interfere with the operation of other programs.

As a horizontal screen scroll, 64 High-Speed Scroll lets you create animated title screens and menus. It uses the syntax, SYS 828,SC,C,L,D, where SC is the first screen line location (1024 to 2048) to be scrolled. Variable C represents the color memory location, L is the number of lines to be scroll-counted from the first line (1 to 25) and D is the direction of the scrolling effect.

Because it's a machine language routine, it offers rapid scrolling speed, and its location in memory doesn't interfere with the operation of Basic programs. Just give the program and its accompanying demo a try, and we think you'll find it one of the fastest-scrolling routines you've seen for the C-64.

```
Ø REM 64 SCROLL ROUTINE - BRET TIMMINS
                                       :REM*63
1Ø FORT=828 TO 98Ø:READD:POKET,D:C=C+D:NEX
  T                                    :REM*68
2Ø IFC<>22315THENPRINT"ERROR IN DATA STATE
  MENTS":END                           :REM*11
3Ø PRINT"FORMAT:SYS 828,SC,C,L,D"  :REM*33
4Ø DATA 32,2Ø3,3,132,251,133,252,32,2Ø3,3,
  132,253,133,254,32,2Ø3,3           :REM*3
5Ø DATA 14Ø,171,2,32,2Ø3,3,14Ø,172,2,173,1
  72,2,24Ø,44,162,Ø,16Ø              :REM*59
6Ø DATA Ø,177,251,72,177,253,72,2ØØ,177,25
  3,72,177,251,136,145,251,1Ø4    :REM*161
7Ø DATA 145,253,2ØØ,192,4Ø,2Ø8,239,136,1Ø4
  ,145,253,1Ø4,145,251,32,177,3   :REM*123
8Ø DATA 232,236,171,2,2Ø8,215,96,162,Ø,16Ø
  ,39,177,253,72,177,251,72       :REM*12Ø
9Ø DATA 136,177,253,72,177,251,2ØØ,145,251
  ,1Ø4,145,253,136,16,241,2ØØ,1Ø4:REM*2Ø7
1ØØ DATA 145,251,1Ø4,145,253,32,177,3,232,
  236,171,2,2Ø8,217,96,24,165    :REM*222
11Ø DATA 251,1Ø5,4Ø,133,251,165,252,1Ø5,Ø,
  133,252,165,253,1Ø5,4Ø,133,253:REM*151
12Ø DATA 165,254,1Ø5,Ø,133,254,96,32,253,1
  74,32,138,173,32,247,183,96    :REM*118
```

```
Ø REM SCROLL DEMO - BRET TIMMINS    :REM*36
1Ø POKE53281,Ø:PRINTCHR$(147);     :REM*24Ø
2Ø FORT= Ø TO11:PRINTCHR$(158);"TRY TO KEE
  P YOUR EYE ON THIS{2 SPACEs}"    :REM*27
3Ø PRINTCHR$(3Ø);"SCROLLING DEMONSTRATION.
  {2 SPACEs}GOOD LUCK! ":NEXT      :REM*137
4Ø R=INT(RND(Ø)*23):RD=INT(RND(Ø)*2)
                                       :REM*137
5Ø SC=1Ø24+4Ø*R:C=SC+54272:L=1:D=RD
                                       :REM*161
6Ø FORT=Ø TO 39                      :REM*58
7Ø SYS828,SC,C,L,D:SYS828,SC+4Ø,C+4Ø,L,ABS
  (1-D)                                :REM*137
8Ø NEXT:GOTO4Ø                         :REM*165
```

—Bret M. Timmins, Sandy, UT

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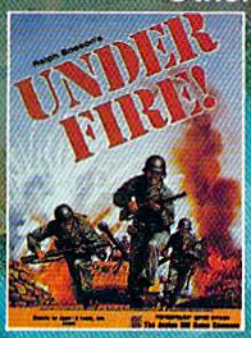

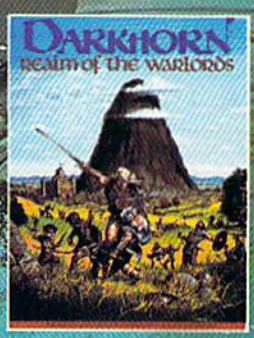

Circle 47 on Reader Service card.

```
2Ø DATA 173,2Ø,3,141,Ø,193,173,21,3,141,1,
   193,12Ø,169,192,141,21,3,169,4Ø :REM*84
3Ø DATA 141,2Ø,3,88,96,12Ø,173,Ø,193,141,2
   Ø,3,173,1,193,141,21,3,88,96,238
                                   :REM*139
4Ø DATA 32,2Ø8,1Ø8,Ø,193           :REM*1Ø
```

—NATHAN JOHNSON, BRIER, WA

$478 A BETTER WAY TO SAVE

Like any good programmer, I periodically save whatever program I'm working on. Of course, the 1541 and early 1571s suffered from a Save with Replace bug, which means that if you're a C-64 user, you avoid the SAVE "@0:filename",8 syntax at all costs. So, rather than perform the time-consuming task of scratching and then saving a file, I save the file each time as "filename 1.0", "filename 1.1", "filename 1.2", and so forth.

If I make a major revision, I save the file with a higher number, such as "filename 3.0", to distinguish it from earlier versions. When the program is complete, I save it as "filename". I then enter: LOAD"$filename????",8. Next, I list the directory. If I want to delete all those earlier versions, I enter:

```
OPEN 15,8,15,"S0:filename????":CLOSE 15
```

My disk is then cleared of all the earlier, unfinished versions, with, of course, the finished version preserved.

—MICHAEL ROSS, LYNCHBURG, VA

$479 TABLESS WRITE PROTECTION

Who says you need a write-protect tab to keep your disks write-protected? My program, Tabless Write Protection, does the same thing on both the C-128 and C-64, without those sticky little annoyances.

```
Ø REM TABLESS WRITE PROTECT - JOSEPH CHARN
  ETSKI                            :REM*65
1Ø PRINT"{SHFT CLR}WRITE PROTECTOR":INPUT"
   {CRSR DN}Ø=OFF 1=ON ";P$:N=65:IFP$="1"T
   HENN=8Ø                         :REM*233
2Ø OPEN1,8,15,"IØ:":OPEN3,8,3,"#":PRINT#1,
   "U1"3;Ø;18;Ø                    :REM*13
3Ø FORL=2 TO166 STEP 164:PRINT#1,"B-P"3;L:
   PRINT#3,CHR$(N);:NEXT           :REM*237
4Ø IFN=65 THEN FORM=1TO2:PRINT#1,"M-W"CHR$
   (M)CHR$(M-5*(M>1))CHR$(1)CHR$(N):NEXT
                                   :REM*52
5Ø PRINT#1,"U2"3;Ø;18;Ø:CLOSE3:PRINT#1,"UJ
   ":FORZ=1TO1ØØØ:NEXT:CLOSE1      :REM*21Ø
```

—JOSEPH CHARNETSKI, DALLAS, PA

$47A TWINKLE, TWINKLE, LITTLE TAB 64

It should come as no surprise to anyone that the C-64's Basic 2.0 doesn't provide a vertical tab command for vertically positioning the cursor on the screen. I've written Tabs with a Twinkle 64 to provide that much-needed vertical tab command and an optional horizontal tab command. The program returns a Syntax error when maximum values are exceeded. The command's syntax appears as:

```
SYS VT, ROW, (COLUMN)
```

where the horizontal column is optional. While 49152 is the default address, the code is relocatable to other locations.

Tabs with a Twinkle 64 earned its name because it also contains a sample program that places twinkling stars around the screen.

```
Ø REM TABS WITH A TWINKLE 64 - FRANK VAN D
  EVENTER                          :REM*24Ø
1Ø REM FORMAT: SYS VT,ROW [,COLUMN]:ROW =
   Ø TO 24:COLUMN = Ø TO 39 (OPTIONAL)
                                    :REM*9
2Ø VT=49152                        :REM*55
3Ø FORX=ØTO45:READA:POKEVT+X,A:NEXT:REM*68
4Ø DATA 169,1,133,19Ø,32,253,174,32,158,17
   3,32,17Ø,177,198,19Ø,48,13,132 :REM*211
5Ø DATA 191,32,121,Ø,24Ø,4,2Ø1,58,2Ø8,232,
   16Ø,Ø,192,4Ø,176,9,166,191,224 :REM*1Ø8
6Ø DATA 25,176,3,76,24Ø,255,76,8,175
                                   :REM*191
1ØØ N=4:REM TWINKLE DEMO - TRY CHANGING TH
    E VALUE OF N                   :REM*98
11Ø X=RND(-TI):PRINT"{SHFT CLR}{CTRL 2}":P
    OKE5328Ø,Ø:POKE53281,Ø         :REM*1Ø8
12Ø DIM P$(N):P$(Ø)="*":FOR X=1TON:P$(X)="
     {9 CRSR RTs} {9 CRSR RTs} {9 CRSR RTs
    } ":NEXT                       :REM*246
13Ø A=23:B=4Ø:FOR X=1TO2 STEPØ      :REM*32
14Ø SYS VT,RND(X)*A+X,RND(X)*B     :REM*149
15Ø PRINT P$(RND(X)*N);            :REM*217
16Ø NEXT                            :REM*35
```

—FRANK VAN DEVENTER, GROSSE POINTE FARMS, MI

$47B TABS WITH A TWINKLE 128

No, C-128 owners, you weren't forgotten. Like the C-64, Basic 7.0 on the C-128 also lacks a vertical tab command. Implementing a C-128 Tabs with a Twinkle is much easier because no machine language routines are necessary.

The program is the same as above, except line 20 has been changed to VT = DEC("FFF0"), lines 30 through 60 have been deleted and P$(X) now equals " ".

Use a value of 39 for B in line 130 for 40-Column mode, and if you're using 80-Column mode, change it to 79.

```
Ø REM TABS WITH A TWINKLE 128 - FRANK VAN
  DEVENTER                         :REM*216
1Ø REM FORMAT: SYS VT,ROW [,COLUMN]:ROW =
   Ø TO 24:COLUMN = Ø TO 39 (OPTIONAL)
                                    :REM*9
2Ø VT=DEC("FFFØ")                  :REM*193
1ØØ N= 4:REM TWINKLE DEMO - TRY CHANGING T
    HE VALUE OF N                  :REM*98
11Ø X=RND(-TI):PRINT"{SHFT CLR}{CTRL 2}":P
    OKE5328Ø,Ø:POKE53281,Ø         :REM*1Ø8
12Ø DIM P$(N):P$(Ø)="*":FOR X=1TON:P$(X)="
     ":NEXT                        :REM*134
13Ø A=23:B=39:FOR X=1TO2 STEPØ:REM USE B=7
    9 FOR 8Ø COLUMN MODE           :REM*18Ø
14Ø SYS VT,Ø,RND(X)*A+X,RND(X)*B    :REM*57
15Ø PRINT P$(RND(X)*N);            :REM*217
16Ø NEXT                            :REM*35
```

—FRANK VAN DEVENTER, GROSSE POINTE FARMS, MI ►

Circle 133 on Reader Service card.

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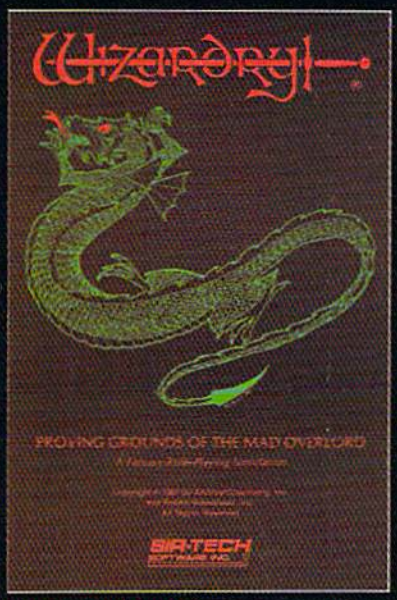

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$47C Dvorak Keyboard 64

Nearly every home computer keyboard uses the Qwerty key configuration, which is inconvenient for those accustomed to typing with a Dvorak keyboard. Dvorak Keyboard 64 alters your C-64 keyboard to the Dvorak configuration.

Pressing run-stop/restore brings back the standard Qwerty keyboard. To re-enable the Dvorak keyboard after pressing run-stop/restore, enter POKE 1,53. Even if you're not a Dvorak-keyboard user, give my program a try. Who knows, you might prefer it to the Qwerty configuration!

```
Ø REM C-64 DVORAK KEYBOARD - RICHARD PENN
                                        :REM*46
1Ø A=88:B=255:C=56334:D=65535:POKE1,55:POK
   EC,PEEK(C)AND(B-1)                   :REM*84
2Ø POKE A+7,Ø:POKEA+8,16Ø:POKEA+2,B:POKEA+
   3,B:POKEA,B:POKEA+1,B:SYS41919 :REM*227
3Ø POKED,PEEK(D):POKEC,PEEK(C)OR1:POKEC-9,
   56:POKE1,53                          :REM*3Ø
4Ø FORT=6Ø289 TO 6Ø352:READD:POKET,D:CK=CK
   +D:NEXT                              :REM*12
5Ø IF CK <> 399ØTHENPRINT"ERROR IN DATA.":
   END                                 :REM*154
6Ø PRINTCHR$(147):PRINTTAB(9)"/ , . P Y F
   G C R L ; =":PRINT                   :REM*77
7Ø PRINTTAB(9)"A O E U I D H T N S -":PRIN
   T:PRINTTAB(9)" ' Q J K X B M W V Z"
                                       :REM*1Ø5
8Ø DATA 2Ø,13,29,136,133,134,135,17,51,44,
   65,52,39,79,46,1,53,8Ø,69,54     :REM*91
9Ø DATA 74,85,89,81,55,7Ø,73,56,88,68,71,7
   5,57,67,72,48,77,84,82,66,43,76:REM*153
1ØØ DATA 78,45,86,83,59,87,92,61,45,19,1,6
    1,94,9Ø,49,95,4,5Ø,32,2,47,3    :REM*16
```

—Richard Penn, Montreal, Quebec, Canada

$47D Effective Joystick

Surprisingly, short and effective joystick routines written in machine language for the C-64 are few and far between. My All-Purpose 64 Joystick routine provides programmers with a byte-size program that can be easily implemented into games and other programs.

Summoned with SYS 830, the All-Purpose 64 Joystick routine scans computer location 900 until a value ranging from 1 to 5 is detected, indicating either that the joystick was moved or the fire-button was pressed.

To help illustrate the effectiveness of the joystick routine, I included a short game (use a joystick in port 2) for you to fill in the entire screen with blocks of reversed space characters. It's frustrating, because the block tends to disappear as the screen becomes filled, and fun, as you try to beat your best time. When you've either filled in the screen or given up, press the fire-button to clear the screen and start again.

```
Ø REM 64 JOYSTICK CONTROL - JAMES MCCONNEL
  L                                     :REM*211
1Ø PRINT"{SHFT CLR}":POKE53281,1:POKE5328Ø
   ,1:X=2Ø:Y=13:Z=1Ø24:A=16Ø:B=4Ø:C=32:GOS
   UB8ØØ                                :REM*125
2Ø POKEZ+X+B*Y,A                        :REM*56
3Ø SYS83Ø: ON PEEK(9ØØ) GOTO 5Ø,6Ø,8Ø,1ØØ,
   12Ø                                  :REM*1Ø
4Ø GOTO2Ø                               :REM*164
5Ø POKE53281,INT(RND(1)*12)+1:POKE5328Ø,IN
   T(RND(1)*14)+1:PRINTCHR$(147):GOTO 2Ø
                                       :REM*165
6Ø Y=Y+1:IFY>24THENY=24                 :REM*11
7Ø GOTO2Ø                               :REM*194
8Ø X=X-1:IFX<.THENX=.                   :REM*189
9Ø GOTO2Ø                               :REM*214
1ØØ Y=Y-1:IFY<.THENY=.                  :REM*145
11Ø GOTO2Ø                              :REM*234
12Ø X=X+1:IF X>39 THENX=39              :REM*55
13Ø GOTO2Ø                              :REM*254
8ØØ FORI=83Ø TO 89Ø: READD:POKEI,D:NEXT:RE
    TURN                                :REM*55
81Ø DATA 169,Ø,141,132,3,173,Ø,22Ø,41,31,2
    Ø1,15,24Ø,17,2Ø1,29,24Ø,19,2Ø1,27,24Ø
                                        :REM*71
82Ø DATA 21,2Ø1,3Ø,24Ø,23,2Ø1,23,24Ø,25,96
    ,169,1,141,132,3,96,169,2,141,132,3
                                        :REM*4Ø
83Ø DATA 96,169,3,141,132,3,96,169,4,141,1
    32,3,96,169,5,141,132,3,96      :REM*63
```

—James F. McConnell, Marathon, NY

$47E Clr-Bottom Key

Like many Commodore users, I've often wished there was a key with an effect like that of the clr-home key, except moving the cursor to the bottom of the screen, rather than to the top. Then, when I want to list a program, the first 25 lines would scroll by slowly while I hold down the control key, instead of scrolling by quickly to fill the screen.

My desire for such a key resulted in Clear-Bottom Key, a short C-64 program written entirely in machine language. After you load and run this program, pressing the F1 key instantly moves the cursor to the lower-left corner of the screen while leaving the screen display undisturbed.

Should you want to move the cursor to that same location and clear the screen in the process, simply press F3. The program is designed to be run before you begin programming, so you'll be able to access it at any time.

```
Ø REM 64 CLEAR TO BOTTOM - KENNY LAWSON
                                        :REM*72
1Ø SA=679:FORX=SA TO SA+39:READA:CK=CK+A:P
   OKE X,A:NEXT                        :REM*226
2Ø IF CK<>4369THENPRINT"ERROR IN DATA":END
                                        :REM*38
3Ø SYSSA:PRINTCHR$(147)"F1 - MOVES CURSOR
   TO BOTTOM"                          :REM*244
35 PRINT"F3 - CLEARS & MOVES CURSOR TO BOT
   TOM"                                :REM*66
4Ø DATA 12Ø,169,18Ø,141,2Ø,3,169,2,141,21,
   3,88,96,165,2Ø3,2Ø1,4,24Ø,1Ø,2Ø1:REM*65
5Ø DATA 5,24Ø,3,76,49,234,32,68,229,24,162
   ,24,16Ø,Ø,32,24Ø,255,76,49,234 :REM*139
```

—Kenny Lawson, Indianapolis, IN

$47F Faster High-to-Low Byte

As most programmers and programmers-to-be already know, many C-64 and C-128 programs use algorithms re-

Continued on p. 20.

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SCIENTISTS A
STOP THE AGE

Time passes. Things get old. Let's face it, even Willie Mays retired. So there's no way your Commodore can compete with a newer machine, right?

Wrong.

The fact is that there's actually more power in your Commodore 64 or 128 than when you bought it. All you need is GEOS or GEOS 128 to find it.

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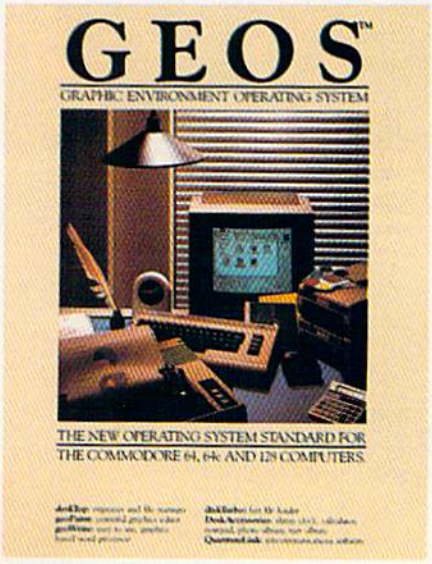
Now, once you know that, you know how every other GEOS application works, too. Like geoWrite, which lets you punch up paragraphs with five different fonts. Or geoPaint, which dresses up diagrams with an arsenal of artistic appliances. Both are built right into the GEOS disk. And when you put them together with geoWrite Workshop's LaserWriter compatibility, every new GEOS document comes out looking like an old master.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GEOCALC

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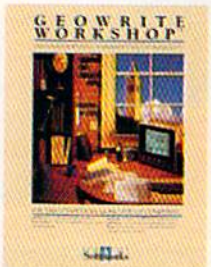
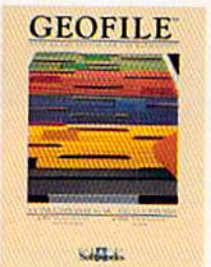


GEOWRITE WORKSHOP

NEW All the GEOS-compatible tools a writer needs, including new geoWrite 2.1 with headers, footers, margins to 8" and features to justify, center, search and replace text. Includes a Text Grabber (for converting text from programs like Paper Clip), geoMerge and LaserWriter printing capability.

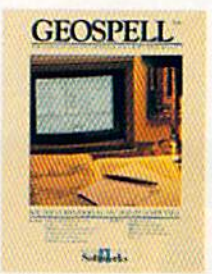


GEOFILE

The GEOS-compatible database manager that sorts, edits and prioritizes whatever data you feed it. You fill out the "input form," specify your command, and geoFile takes it from there.

GEOPROGRAMMER

NEW A programmer's dream for writing your own programs or supercharging someone else's. With easy yet mind-boggling features like graphics that insert by simply cutting and pasting directly from geoPaint. Comes with geoAssembler, geoLink and geoDebugger for modular assembly and testing.



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NEW Over 28,000 word geoDictionary for checking spelling. Lets you add words, switch dictionaries, edit, and automatically search and replace. Customize and create fonts up to 48 pt. with geoFont.

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NG PROCESS!

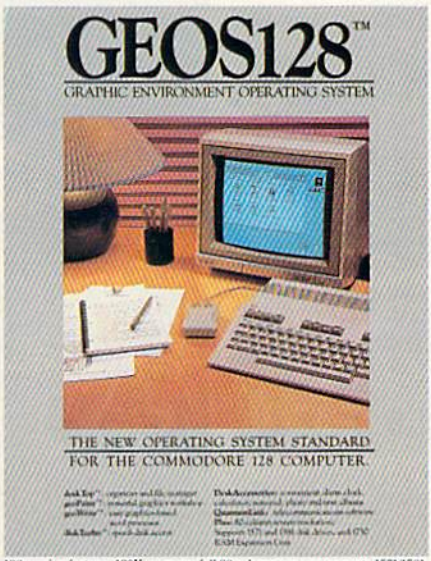
Avoid Old Age Forever!

But how does all this affect your Commodore's future? Well, it means you don't ever have to worry about it becoming obsolete, because there are all kinds of GEOS applications for almost every purpose.

You can finally get organized with geoFile, the database that searches, finds and lists almost anything that you want to search, find and list. You can manipulate mathematics or figure out financial formulas with geoCalc. If writing's your style, geoWrite Workshop can help you hammer out any kind of report. And geoPublish is the desktop publishing program that is still making headlines throughout the entire industry.

Of course, that's merely a sampling of what the GEOS environment has to offer. Because even as you read this, legions of our engineers are hard at work, developing even more GEOS applications for even more uses.

All of which means you get a whole lot more out of your Commodore than you ever bargained for. And while that may not actually keep your Commodore from getting older, that's certainly something it could live with for a long, long time.



128 version features 128K memory, full 80 column screen, supports 1571/1581 disk drives. 1750 RAM expansion and runs at a full 2 MHz for lightning speed.

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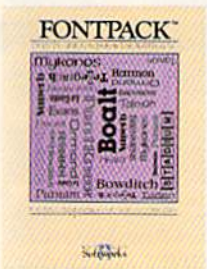

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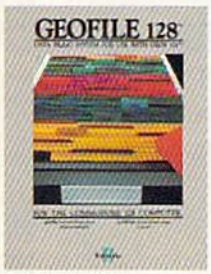
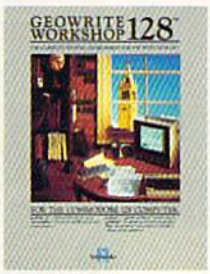


GEOFILE 128

NEW The GEOS-compatible database manager that sorts, edits and prioritizes whatever data you feed it. You fill out the "input form," specify your command, and geoFile takes it from there. 128 version features full 80 column screen. Due soon!



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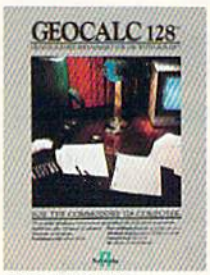

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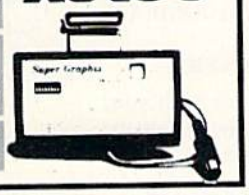

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From p. 14.

quiring that the addresses of memory locations be converted from a low-byte/high-byte configuration to high-byte/low-byte. The most common equation used on both computers to perform this conversion is:

```
HB = INT(LOC/256) : LB = LOC - (HB*256)
```

However, the C-64 and C-128 will perform the byte conversion almost 10 percent faster if you use this equation:

```
HB = INT(LOC/256) : LB = LOC and 255
```

To prove it, type in and run the following program, which displays the amount of time, in jiffies ($^1/_{60}$th second), required to perform 1000 calculations, using both the above methods.

```
Ø REM FASTER HI-BYTE TO LO-BYTE - ARIEL SA
  LOMON                                  :REM*66
1Ø TI$="ØØØØØØ":FORI= Ø TO 999           :REM*52
2Ø HB=INT(I/256):LB=I-(HB*256):NEXT
                                         :REM*135
3Ø T1=TI:PRINT"OLD METHOD OF CALCULATIONS
   TOOK"T1"JIFFIES."                     :REM*2Ø5
4Ø TI$="ØØØØØØ":FORI= Ø TO 999           :REM*2Ø2
5Ø HB=INT(I/256):LB=I AND 255:NEXT:REM*235
6Ø T2=TI:PRINT"NEW METHOD OF CALCULATIONS
   TOOK"T2"JIFFIES."                     :REM*24
7Ø PRINT"NEW METHOD IS"ABS(T2/T1-1)*1ØØ"%
   FASTER                                :REM*23
```

—ARIEL SALOMON, RICHMOND, CA

$480 ATTENTION: C-128/1902A OWNERS!

If you use a Commodore 1902A video monitor with your C-128, here's a way to get a clearer and cleaner screen image by increasing the resolution of 80-Column mode:

```
POKE 54784,9:POKE54785,232
```

Since I'm a confirmed RUN Script 128 user, I found the default resolution a little hard on my eyes after an hour or so. So now I include the above Pokes within the boot programs of all my 80-column programs.

—JOHN RYAN, BILOXI, MS

$481 PERPETUAL 64 MEMORY DISPLAY

Here's a little interrupt-driven wedge that keeps track of how many free bytes of RAM are available in your computer while you run other C-64 programs. A hexadecimal number displayed in the upper-left corner of the screen is continually updated as the program in memory is altered by either the input or deletion of data. You'll find my program especially helpful when you're using large programs, such as databases, to prevent Out of Memory errors.

```
Ø REM RAM DISPLAY - DOROTHY ZACHARY
                                         :REM*244
1Ø FOR AD=49152 TO 49259:READ DA:POKEAD,DA
   :CK=CK+DA:NEXT                        :REM*242
11 IFCK<>9682THENPRINT"ERROR IN DATA":END
                                         :REM*61
12 SYS49247:NEW                          :REM*114
2Ø DATA 56,165,52,229,5Ø,17Ø,74,74,74,74,1
   68,185,78,192,141,Ø,4,169,1,141:REM*2ØØ
3Ø DATA Ø,216,138,41,15,168,185,78,192,141
   ,1,4,169,1,141,1,216,56,165,51  :REM*46
4Ø DATA 229,49,17Ø,74,74,74,74,168,185,78,
   192,141,2,4,169,1,141,2,216,138 :REM*65
5Ø DATA 41,15,168,185,78,192,141,3,4,169,1
   ,141,3,216,76,49,234,Ø,48,49,5Ø:REM*183
6Ø DATA 51,52,53,54,55,56,57,1,2,3,4,5,6,Ø
   ,12Ø,169,192,141,21,3,169,Ø,141:REM*197
7Ø DATA 2Ø,3,88,96                       :REM*217
```

—DOROTHY L. ZACHARY, RICHARDSON, TX

$482 C-128 SPECIAL INPUT

It's unfortunate that Basic 7.0 on the C-128 doesn't accept strings containing commas or semi-colons. For example, in the Basic 7.0 program below:

```
100 PRINT "PLEASE ENTER DATE:": INPUT DT$
110 PRINT DT$
```

when the "Please enter date:" prompt appears, and you enter: July 4, 1988, the program will print an ?Extra Ignored message to the screen. The ?Extra Ignored error was generated by the colon in line 100, so the date (which is INPUT DT$ following the colon) wasn't printed to the screen. My program cures this problem by installing a small wedge in memory that would allow line 110 to print the date.

While my program includes a demonstration showing how it works, incorporating it into programs of your own design is clearly outlined by examining the listing. Programmers can use the routine to make bullet-proof input routines for C-128 databases, spreadsheets and any other programs that require the input of data.

```
Ø REM SPECIAL C-128 INPUT - JERRY SPICER
                                         :REM*166
1Ø FORX=4864 TO 4893:READ D:POKE X,D:NEXT:
   GOTO11Ø                               :REM*31
2Ø DATA 169,Ø,16Ø,Ø,153,Ø,2,2ØØ,192,3Ø,2Ø8
   ,248,32,147,79,16Ø,Ø,185,Ø,2    :REM*15Ø
3Ø DATA 153,Ø,2Ø,2Ø1,Ø,2ØØ,2Ø8,245,96,1
                                         :REM*54
4Ø :                                     :REM*98
5Ø REM SUBROUTINE STARTS LINE 6Ø  :REM*1Ø3
6Ø NM$="":SYS4864                        :REM*15
7Ø FORX=512Ø TO 5149:X$=CHR$(PEEK(X))
                                         :REM*195
8Ø NM$=NM$+X$:NEXT                       :REM*57
9Ø RETURN                               :REM*232
1ØØ REM SAMPLE PROGRAM                  :REM*18Ø
11Ø REM START YOUR PROGRAM HERE   :REM*24Ø
12Ø PRINT"ENTER NM$ INCLUDING COMMAS & COL
    ONS: ";:GOSUB 6Ø                      :REM*5
13Ø PRINT"NM$= "NM$                     :REM*213
14Ø GOTO 11Ø                            :REM*2ØØ
```

—JERRY SPICER, AMES, IA

$483 YET ANOTHER USE FOR RUN SCRIPT

If you're one of the fortunate users of the latest 2.56 version of RUN Script 64 or 128 found in *RUN*'s Productivity Pak III, you also have access to a phenomenal disk cataloger.

Once you've filled up several disks with word processing files, programs, and those invaluable Magic tricks, simply boot up a copy of RUN Script 2.56, load in the directory (F1,$,$) from the first disk that you want to catalog and press the restore key. Your directory is now contained in RUN Script's text area.

If you want to remove the numbers that signify the number of disk blocks that each file occupies, cursor down through ►

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the document and manually remove them. To remove the PRG-, SEQ- or USR-file identifiers following each filename, use RUN Script's Search with Replace feature: Press F4 twice in rapid succession and, at the Search for? prompt, enter " prg", " seq" or " usr" (note the space in front of each file identifier). Then press return at the Replace with? prompt. This exercise in Search with Replace instantly removes the identifier from each filename.

Now, position your cursor after each filename and enter any notes pertaining to the file, such as whether it is a program, one of *RUN*'s Magic tricks, or a word processing, spreadsheet or database file.

At this point, remove the Blocks Free statement at the end of the directory and save this list of filenames to disk. Finally, you should print out a copy to keep with the disk. Place your printer into Compressed mode (137 characters per inch) and place the command .pw137 at the beginning of the document. Keeping the printout compressed in this manner allows all but the longest of file notes to occupy only one line each. Slip the printout into the disk protector along with the disk for safe keeping and future reference. There you have it; a complete, easy-to-use disk cataloger!

—TIM WALSH, *RUN* STAFF

$484 *RUN*'s Checksum Enhancement

I've developed a modification to *RUN*'s Checksum program that prints the checksum number in the upper left-hand corner (home position) of the screen. This works in 64 mode and in 128 mode on both 40- and 80-column screens. Moreover, the current cursor location is restored after the checksum is printed to the screen, so your cursor is right where it should be to enter the next line of the program listing.

Just add lines 31–33 and 180–190 to the original *RUN*'s Checksum listing, and be sure to save it to disk before running.

```
Ø REM CHECKSUM IN HOME POSITION - BOB KODA
  DEK                                  :REM*2Ø5
31 FOR P=I TO I+28:READ BY:CS=CS+BY:POKE S
   A+P,BY:NEXT                         :REM*3Ø
32 IF CS<>37ØØ THEN PRINT"DATA ERROR IN LI
   NES 18Ø-19Ø":END                    :REM*67
33 POKE SA+11Ø,24Ø:POKE SA+111,38:POKE SA+
   14Ø,234                             :REM*222
18Ø DATA 1Ø4,17Ø,24,32,24Ø,255,1Ø4,168,96,
    56,32,24Ø,255,138,72,152,72        :REM*16
19Ø DATA 24,162,Ø,16Ø,Ø,32,24Ø,255,169,42,
    2Ø8,198                            :REM*212
```

—BOB KODADEK, ASTON, PA ■

Magic is the original *column of reader-submitted hints and tips. Each month we present brief, useful computer tricks to help you get the most out of your Commodore system—whether you're a beginning or advanced computerist, a C-64 or C-128 owner. Magic is a forum for* RUN*'s imaginative and inventive readers to share their programming tips, brief software or hardware modifications, shortcuts or items of general interest. If you have an idea to make computing easier, faster, more exciting and enjoyable, send it to:*

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RUN *pays $10 to $40 for each trick published in the column. A payment of $50 and a Magic Contributor T-shirt is awarded for the Trick of the Month. To be eligible, the Trick of the Month must be for the C-64 or the C-64 and C-128. Tricks for C-128 mode only are not eligible for Trick of the Month.*

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While the default colors in line 60060 already create a colorful animated border, you can substitute red, orange and yellow to produce a glowing neon effect. To increase or decrease the speed of color cycling, change the value of FZ in line 60230.

Once you've typed in Display Frame Animation and saved it to disk, you can add it as a subroutine to your own programs. Just follow these steps:

1. Load your program into the computer.
2. In Direct mode, type:

```
L=PEEK(45)+PEEK(46)*256-2:POKE44,L/256:POKE43,
L-PEEK(44)*256 <return>
```

3. Now load Display Frame Animation and enter:

```
POKE43,1:POKE44,8 <return>
```

4. Finally, remove the REM in front of the Return statement in line 60250. R

—JOSEPH R. CHARNETSKI, DALLAS, PA

Listing 1. Display Frame Animation program.

```
6ØØØØ REM 64/128 TITLE ANIMATOR - JOE CHAR
      NETSKI                           :REM*8 ►
```

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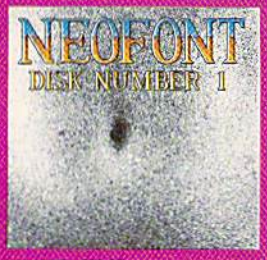

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1541 AUNTIE BUMP BOARD – $49.95
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It's surprising that the generic mortal species hadn't come up with a device to ELIMINATE the damaging knock on the 1541 disk drive before now. After looking at the circuit board, I've come to the conclusion that they did it almost as good as the Vorkons could've.

ENTROPY – $29.95
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? ? ? ? ? ? ? (The Hitchhiker's Guide to Galaxian Software)

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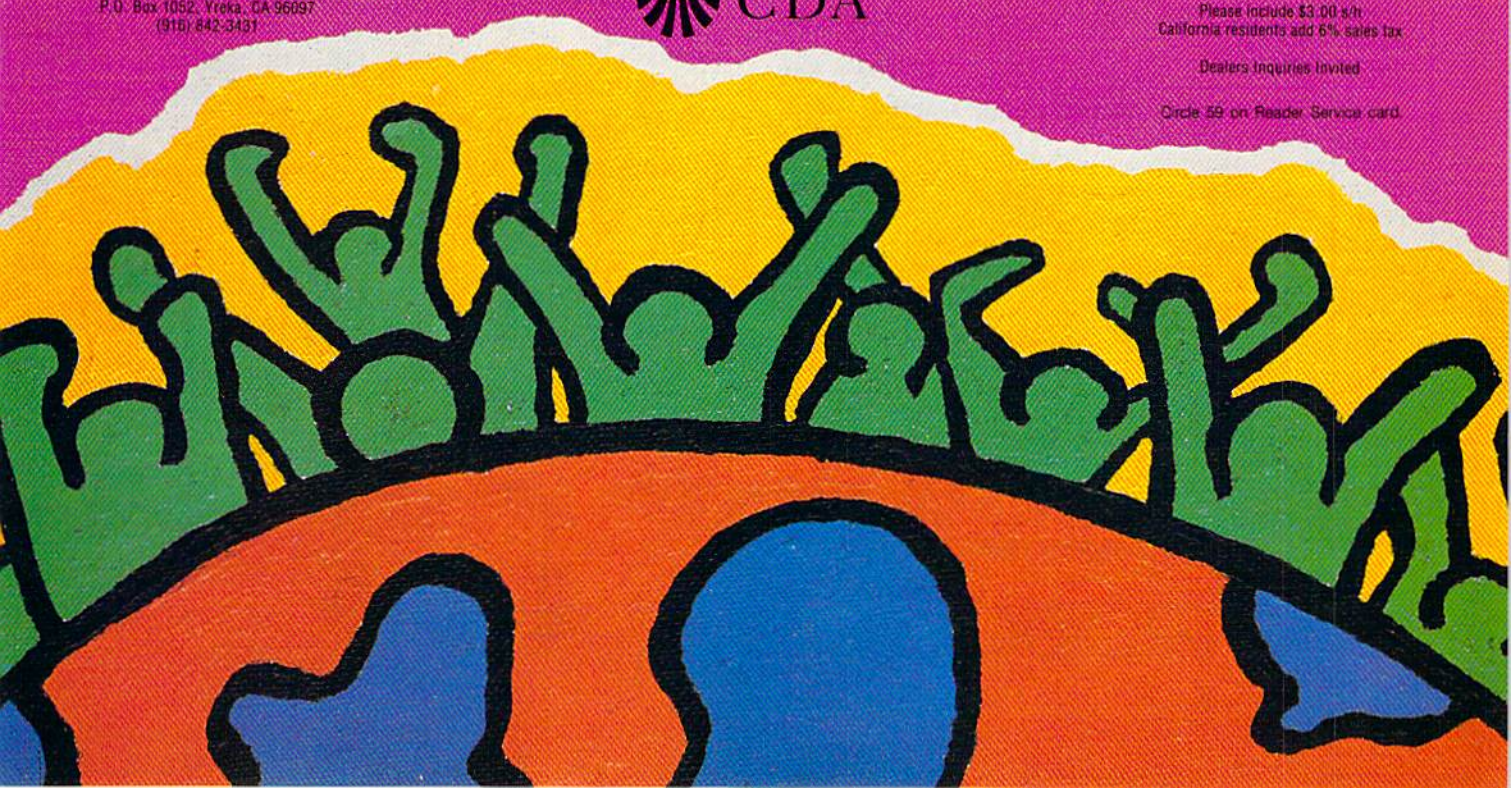

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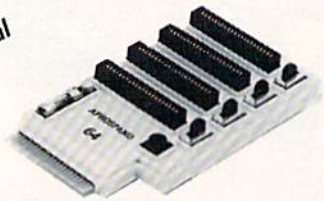

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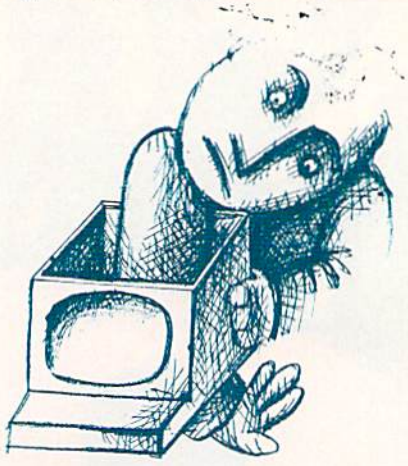
MEGA-MAGIC

```
6ØØ1Ø FD=8:DIM FL$(FD)                    :REM*216
6ØØ2Ø FL$(1)="MAGICAL DISPLAY"            :REM*82
6ØØ3Ø FL$(4)="DISPLAY FRAME ANIMATOR"
                                          :REM*147
6ØØ4Ø FL$(6)=" BY JOE CHARNETSKI          :REM*231
6ØØ6Ø FC$(1)="{CTRL 4}":FC$(2)="{CTRL 5}":
      FC$(3)="{CTRL 7}"                   :REM*215
6ØØ7Ø FORI=1TOFD:FS=LEN(FL$(I)):IFFH<FSTHE
      NFH=FS                              :REM*85
6ØØ8Ø NEXT: FH=FH+4:FV=INT((25-FD-2)/2)
                                          :REM*1Ø4
6ØØ9Ø FOR I=1TO(4Ø-FH)/2:FX$=FX$+"{CRSR RT
      }":NEXT                             :REM*81
6Ø1ØØ IFFV>2THENFORI=1TOFV-1:FY$=FY$+"{CRS
      R DN}":NEXT                         :REM*177
6Ø11Ø FORI=1TO3:READF1,F2,F3,F4           :REM*113
6Ø12Ø FORJ=1TOFH:F5$(I)=F5$(I)+CHR$(F1)
                                          :REM*2ØØ
6Ø13Ø F7$(I)=F7$(I)+CHR$(F3)+"{2 CRSR LFs}
      ":NEXT                              :REM*125
6Ø14Ø FORJ=1TOFD+2:F6$(I)=F6$(I)+"{CRSR DN
      }{CRSR LF}"+CHR$(F2)                :REM*2Ø3
6Ø15Ø F8$(I)=F8$(I)+"{CRSR UP}"+CHR$(F4)+"
      {CRSR LF}":NEXT:NEXT                :REM*23
6Ø16Ø FORI=1TO3:FA$(I)="{HOME}"+FY$+FX$+FC
      $(I)+F5$(I)+F6$(I)                  :REM*17Ø
6Ø17Ø FB$(I)="{CRSR DN}{CRSR LF}"+F7$(I)+"
      {CRSR RT}"+F8$(I):NEXT              :REM*94
6Ø18Ø :                                   :REM*165
6Ø19Ø POKE5328Ø,2:POKE53281,Ø             :REM*141
6Ø2ØØ PRINT"{SHFT CLR}{CRSR DN}{COMD 8}"FY
      $                                   :REM*6Ø
6Ø21Ø FORI=1TOFD:PRINTTAB(2Ø-LEN(FL$(I))/2
      )FL$(I):NEXT                        :REM*217
6Ø22Ø FORI= 1 TO 3:PRINTFA$(I)FB$(I)
                                          :REM*71
6Ø23Ø FORFZ=1TO25:NEXT:NEXT               :REM*183
6Ø24Ø GETA$:IFA$=""GOTO6Ø22Ø              :REM*149
6Ø25Ø PRINT"{SHFT CLR}{CTRL 2}":REM RETURN
                                          :REM*17Ø
6Ø26Ø DATA 164,167,163,165,175,17Ø,183,181
      ,185,182,184,161                    :REM*194 ■
```

RUN it right: **C-64; C-128 (40- and 80-Column modes)**



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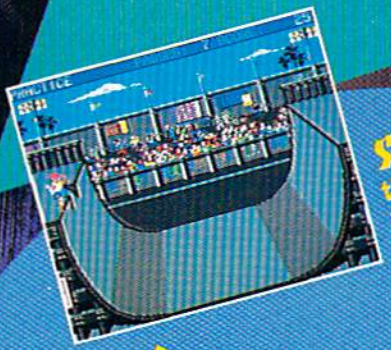

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News and New Products

Check out the new Star Trek graphics adventure, career possibilities in computers, and an unusual contest at the Computer Museum in Boston.

Compiled by HAROLD R. BJORNSEN

Boldly Go. . .

NEW YORK—Simon & Schuster Software (One Gulf+Western Plaza, New York, NY 10023) has released Star Trek: The Rebel Universe, the company's third in its series of Star Trek graphics adventures for the C-64.

The United Federation of Planets is faced with its greatest challenge ever. An insidious mind-control scheme by Klingon forces is turning loyal Federation members into violent rebels. It is your five-year mission to lead the crew of the starship *Enterprise* through the perilous Quarantine Zone, where you'll encounter hostile Klingons, Romulans and rebel Federation vessels. If you fail to stop this rebellion, you will suffer the penalty of eternal exile for the *Enterprise* and its crew. The future of the Federation lies in your hands for $29.95. Joystick required.

Check Reader Service number 400.

Modemption

ALBANY, OR—The SupraModem 2400, a new modem for the C-64 from Supra Corp. (1133 Commercial Way, Albany, OR 97321), supports asynchronous operation at 300, 1200 and 2400 baud. The unit features 100 percent AT command compatibility, autoanswer/autodial (tone or pulse) and a programmable volume speaker. An operator's manual, quick-reference card, power adapter and telephone cable are included, and an RS-232C interface and cable are required for operation. It's available for $179.95.

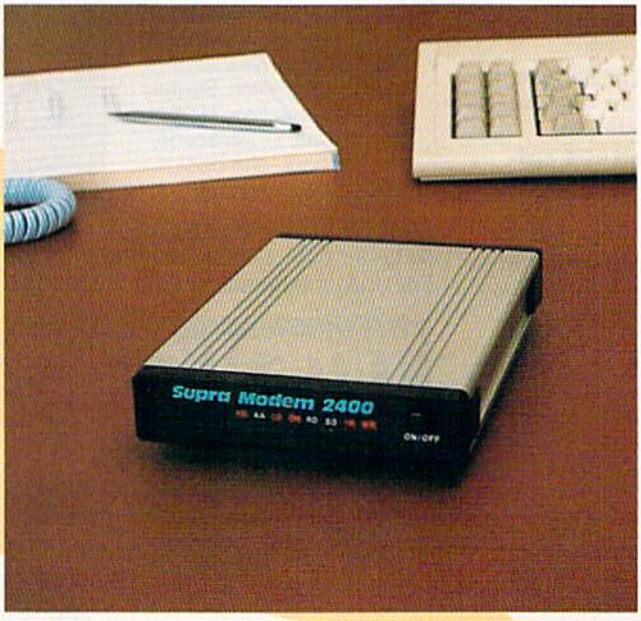
Check Reader Service number 401.

Computer Career Consultant

BLUE RIDGE SUMMIT, PA—*The Complete Computer Career Guide* assesses 25 major computer career options, ranging from data entry operator to hardware designer.

Based on interviews with workers in the computer field, the 256-page book examines real-life job requirements, benefits and drawbacks. Coverage includes job descriptions, educational and experience requirements, salary ranges, advancement opportunities, travel requirements, job environment, working hours, personality requirements and where to get started on a successful job search. With 39 illustrations, the book is available in paperback ($12.60) and hardcover ($18.95) from Tab Books, PO Box 40, Blue Ridge Summit, PA 17214.

Check Reader Service number 407.



Supra Corporation's SupraModem 2400 comes with a one-year warranty and looks good on your desk.

Connections

CLEVELAND—Micro Development (PO Box 5872, Cleveland, OH 44101) has developed a serial data link cable that lets you connect two C-64 user ports together for telecommunications projects, interactive games or anything requiring the use of two computers. Installation and programming instructions are included with the ten-foot cable for the price of $25, and longer cables are available.

Check Reader Service number 402.

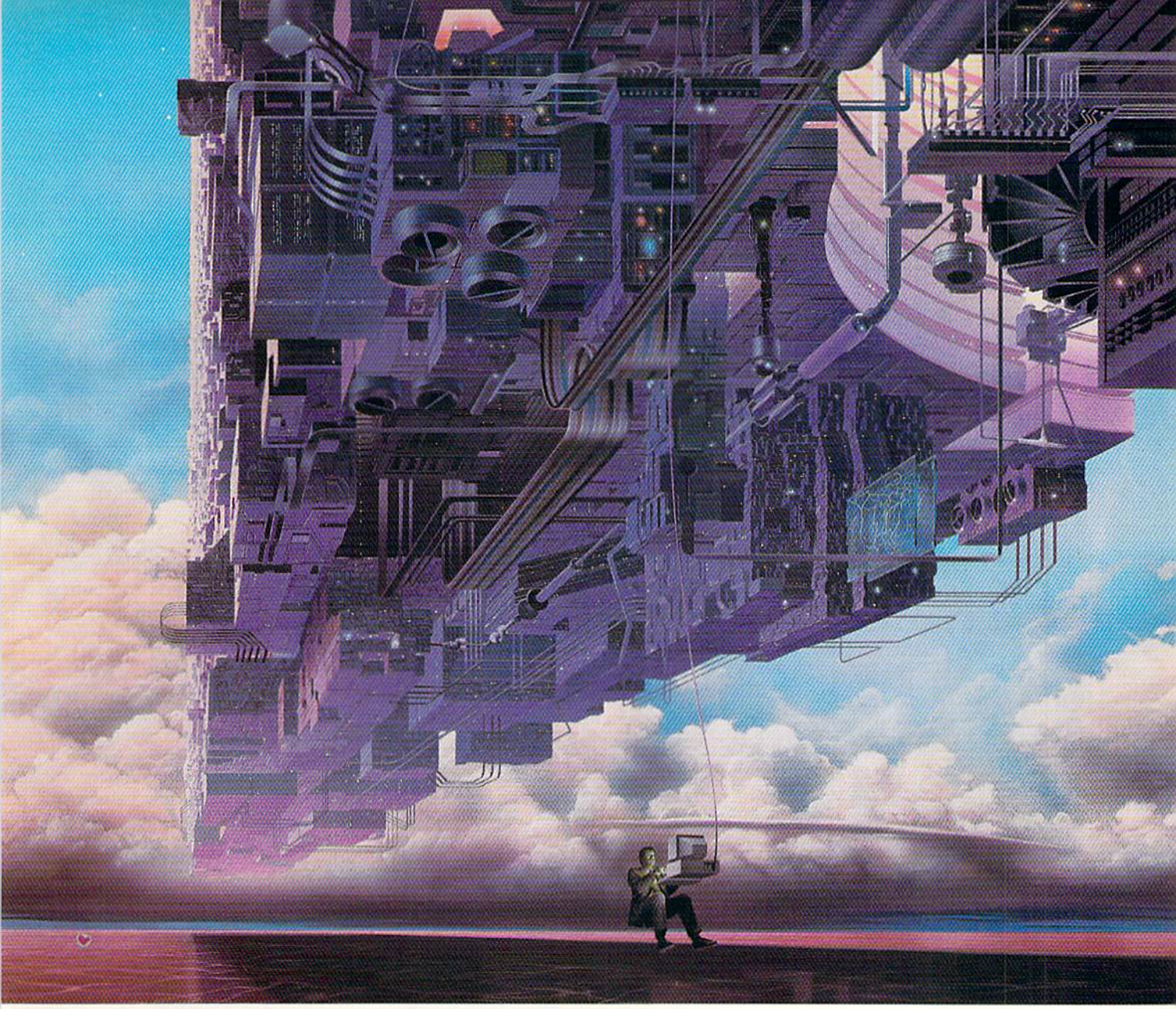
Hot Shot Plus

SEATTLE—The Hot Shot Plus, a graphics printer interface for the C-64 and C-128, comes with an internal 8K RAM that you can expand to 64K RAM. Two sets of DIP switches let you select and control the interface's functions. Six Near Letter Quality fonts are built into the unit's 32K ROM, and you can design additional fonts. A disk of fonts is included in the package. You can convert standard graphics printouts into double or quadruple density graphics suitable for pasteup or reproduction. Hot Shot Plus is available for $99.95 from Omnitronix, 760 Harrison St., Seattle, WA 98109.

Check Reader Service number 405.

Easy Disk Management

INDIANAPOLIS—Howard W. Sams & Co. (4300 West 62nd St., Indianapolis, IN 46268) has published *Hard Disk Management Techniques*. Each technique is explained to help experienced business professionals become proficient in managing their hard disk environment. Among the topics the 250-page tutorial covers are hard disks and DOS



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and maintenance, setting up and organizing a hard disk, and hard disk managers. Each technique explained is based on the author's own consulting experience with Fortune 500 companies. The book is available for $19.95.

Check Reader Service number 406.

Winners Announced In Beantown

BOSTON—The Computer Museum (Museum Wharf, 300 Congress St., Boston, MA 02210), the only museum in the world devoted entirely to computers and their impact on society, has announced the winners of the Second International Core Wars Tournament. The contest involves two programs that are battling for supremacy within a single computer.

Robert Reed, 39, a computer programmer from Windsor Locks, Connecticut, won first place with his program, Ferret, which was made up of only 12 instructions. His strategy was to make his program as small a target as possible. "I also tried to make the most efficient use of my instruction set," he said.

Plague, the second-place program written by Ron Paludan of Tucson, Arizona, involved 18 instructions and two programs running at the same time. Said Mark Clarkson, director of the International Core Wars Society, "One [program] tried to cause uncontrolled growth in the opponent program, while the other tried to kill those infected by the first program."

Interest in Core Wars, a computer game, evolved into the annual contest after its author, A.K. Dewdney, described it in his May 1984 "Computer Recreations" column in *Scientific American*.

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Colorez

KUTZTOWN, PA—Briwall (PO Box 129, Kutztown, PA 19530) is distributing Colorez 128, a graphics utility that turns your 40-column graphics pictures into hi-res, 16-color graphics on your 80-column RGBI screen. The program features an icon-driven menu for use with your joystick or mouse, and you can create title screens, graphs and diagrams for your own programs. The program is compatible with all Basic, compiled Basic and machine language programs, including Basic 8. It's available for the C-128 for $14.95.

Check Reader Service number 408.

30 Cubic Inches

SUNNYVALE, CA—The Avatex 1200e, a 1200/300-baud stand-alone modem from Elec & Eltek (1230 Oakmead Parkway, Suite 310, Sunnyvale, CA 94086) includes such functions as manual/automatic originate/answer, call progress option, Bell and CCITT (international) operation at both 300 and 1200 baud and DIP switches for permanent option settings. The modem is for home, school or portable-computer use. The 5- by 6- by 1-inch modem is available for $99 and requires an RS-232 interface connected to your C-64 or C-128.

Check Reader Service number 404.

See What's In Your Drive

FREEHOLD, NJ—The NoLabelSystem, a computer-disk identification system, eliminates label usage entirely, with a replaceable card containing disk information that's inserted into a thin, clear-plastic window pocket affixed to the disk. The kit includes 100 plastic pockets that attach to 5¼- and 3½-inch disks, ►

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100 white insert cards and 100 color-coded insert cards, together with instructions. It's available for $22.45 from Weber & Sons, 3468 Highway 9, Freehold, NJ 07728.

Check Reader Service number 403.

Go Offline for a Change

LOS ANGELES—Spectrum Electronic Network (PO Box 4903, Panorama City, CA 91412), an "offline" national bulletin board system on disk for the C-64, has released an enhanced 4.04 operating system. The upgraded software also supports full-color text displays and new E-mail editing capabilities.

New forums have been added to Spectrum's Fall 1987 lineup: Online! is devoted to telecomputing and Art Gallery is a forum on C-64 graphics. A GEOS forum is in development.

The company's Freeware Library has also expanded the number of public domain programs in the categories of arcade and adventure games, programmer's utilities, home, business and educational applications.

New subscribers pay a one-time fee of $16.95 for the operating system and support utilities, and a two-month subscription is included at no cost.

Check Reader Service number 410.

Outrageous Pages

SAN MATEO, CA—Outrageous Pages, a paint and graphics/layout program for the C-64, lets you create and design newsletters, calendars, certificates, signs, flyers, invitations—almost anything that takes the printed word or graphics—for your school, church group or home business. The package has 50 fonts and a library of 80 art pieces, and autoflow margins lets you flow text around or within artwork. A number of on-disk templates for production of materials like newsletters, coupons, place cards and name tags are also included. Available for $49.95 from Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404.

Check Reader Service number 409.

Hard To Believe

REDWOOD CITY, CA—What do teenage boys between the ages of 12 and 18 do with their computers? That's what Epyx, a technology-based consumer entertainment products firm, wanted to know, so they took a survey.

Unlike Ferris Bueller, who used his computer to change his number of school absences from nine to two on his principal's database, it turned out that 76 percent burned the midnight oil doing their homework. The Epyx Teen Survey also found that 56 percent used their computers to do programming and 43 percent said they wrote letters. Of those who responded, 87 percent also played computer games.

Name Change

BERKELEY, CA—Brian Dougherty, chairman and CEO of Berkeley Softworks, developer of the GEOS operating system, has recently announced that the name of the company's product, Writer's Workshop, has been changed to geoWrite Workshop.

GeoWrite Workshop, initially introduced in 1986, includes geoWrite 2.1, a word processor; geoMerge, a mail-merge program; Text Grabber, which converts documents from other word processors to GEOS format; and geoLaser, which lets you use the Apple LaserWriter laser printer. ■

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Torchbearer

Years ago, Talis Vaultheart, a powerful and evil wizard, stole the Torch of Truth and hid it somewhere within the many sanctuaries and dungeons of Pastoria. With the people thus blinded, Vaultheart began to take the land. The time has come to take it back!

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Torchbearer is a challenging, graphic adventure game for the C64. $29.95.

1541/1571 Drive Alignment

"...excellent, efficient program that can help you save both money and downtime."
Compute!'s Gazette, Dec., 1987

1541/1571 Drive Alignment reports the alignment condition of the disk drive as you perform adjustments. On screen help is available while the program is running. Includes features for speed adjustment and stop adjustment. Complete instruction manual on aligning both 1541 and 1571 drives. Even includes instructions on how to load alignment program when nothing else will load! Works on the C64, SX64, C128 in either 64 or 128 mode, 1541, 1571 in either 1541 or 1571 mode! Autoboots to all modes. Second drive fully supported. Program disk, calibration disk and instruction manual only 34.95!

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- Perform FRE(0)
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- Change THIS TO THAT — search for all instances of specified string and replace with second specified string

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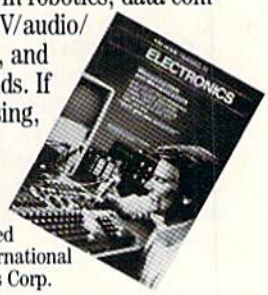

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VIDEO UPGRADE FOR THE C-128

Thank you for the excellent and enthusiastic review of Basic 8.0 in last November's issue. I have been using this programming/graphics language for some months and totally agree with John Premack's praise. However, he did make an omission that may confuse C-128 owners who want to upgrade their video RAM to take advantage of a full 64K of video data. Premack correctly identifies the needed chips as 4464s, but fails to mention that they must have the correct speed rating. The 4464 comes in a variety of ratings, and only those rated at 120ns work correctly with the C-128.

Because I want to see a lot of 128 owners do this upgrade—to encourage software houses to write new programs in Basic 8.0—I am making available, for $12.90 including postage, the correct upgrade RAMs, sockets and installation instructions. Send a check to me at the address below, and I'll send you one of my kits.

The article correctly advises that only those handy with a soldering iron should attempt this upgrade. All others should take the chips to an authorized Commodore service center and let them do the installation.

—HOWARD L. HERMAN
229 EAST 28TH ST.
NEW YORK, NY 10016

We appreciate your kind words for RUN *and your offer to other readers. Readers should note that this modification does void the warranty on the computer. Those who are interested in the upgrade and aren't handy with a soldering iron can find a list of Commodore-authorized service centers in the* RUN *Special Issue #4 (1988).*

—EDITORS

STRAIGHTENING THE FAMILY TREE

I'd like to clarify an issue raised by Christine and John Adamec in their generally favorable review of our genealogical software, Arbor-Aide, which appeared in last December's "All in the Family Tree" article. They indicated that by typing in an ancestor's name wrong, a user could make our copy-protection scheme destroy ancestor information files. This is simply not true.

Without going into detail, suffice it to say that our mild form of copy protection is not the danger and impediment the authors presented it to be. It doesn't make disk drives knock, it never destroys disks, and the user can make an unlimited number of backup disks. Further, should an Arbor-Aide disk ever fail, for any reason, we'll supply a replacement disk, free of charge. We're committed to service to our customers and are always available to provide assistance, even in areas not directly involved with our software.

Our thanks to the Adamecs for a much-needed article that should prove most valuable to those considering the purchase of genealogical software.

—DANIEL G. RITZINGER
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WHOSE FAVORITE SON?

Concerning the item in last November's News and New Products on Strategic Simulations' game called President Elect—1988 Edition, I must say I agree that George Bush would handily defeat Albert Gore. However, Gore is a Democrat from *Tennessee*, not Kentucky.

—GLENN STEIN
NASHVILLE, TN

Oops! on SSI's part, because they said Kentucky in their press release. Shame on us, because we New Hampshire people are in the midst of primary fever, and we didn't catch the error.

—EDITORS

FOGGY ISSUE

In last December's Mail RUN, a letter from James Peeples mentioned a company called First Osborne Group that distributes CP/M software for the C-128. However, no address was given. Would you please tell me how to contact them for a list of their software and prices?

—RANDY L. MILLER
SHELBY, NC

Glad to, but first of all, First Osborne Group (FOG) isn't a company; it's a nationwide user's group that was started for Osborne computer users and has since expanded its support to users of various CP/M-running machines. You can contact them at PO Box 3474, Daly City, CA 94015; 415-733-2933.

—EDITORS

DOS SHELL SHINE

Thanks to Tim Walsh for his sidebar on the C-128 DOS Shell with John Ryan's "64 DOS Shell" article in November; I've never really understood the Shell until now. While working with the Customizer program in Magic trick $442 of that issue, I accidentally scratched the program, but the Shell enabled me to recover it. Little things like that really make my day shine!

—J. A. SMITH
BYFIELD, MA

IMPROMPTU REVIEWS

I agree with Leo L. Dush in last October's Mail RUN that Bob Guerra was overly negative with regard to Fontmaster 128 in his August article, "What's Write for You?" As I write this letter, using FM 128, I look at the top of my monitor screen and can't understand how anyone could be confused by the information provided there.

I do agree with Guerra about the word wrap. In spite of Dush's remark, FM 128 doesn't have true word wrap in the Edit mode *on the screen*. It does, of course, perform word wraps when it prints.

Dush's statement that Xetec was coming out with a spelling checker for FM 128 was correct. I've just sent them $10 for their SpellMaster disk, and the price includes an updated version of FM 128 itself. ►

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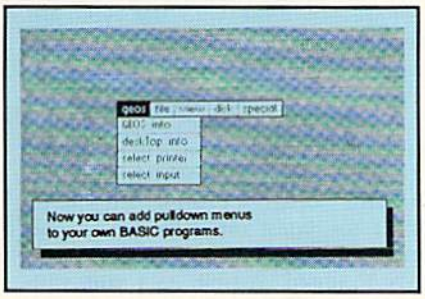

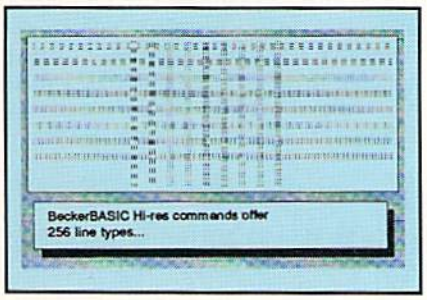

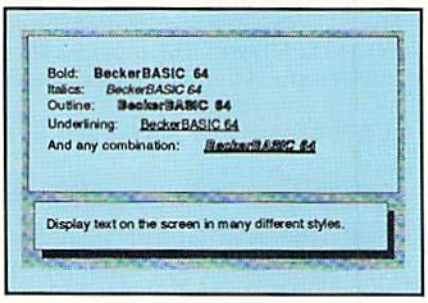
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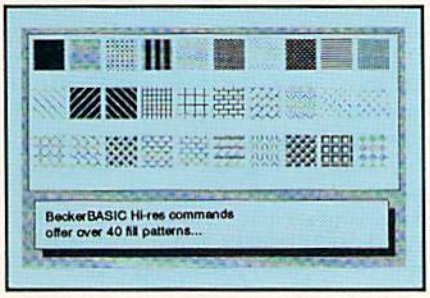

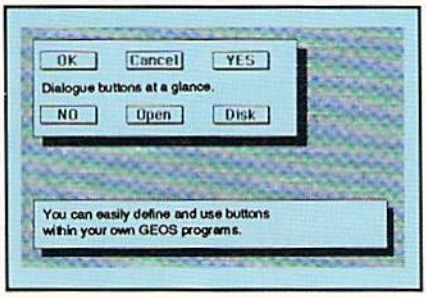

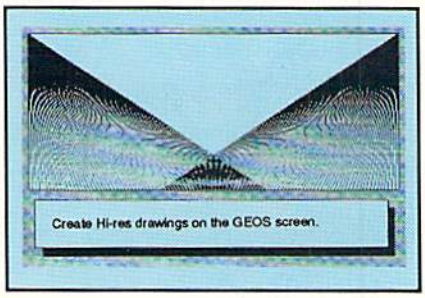

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One point I feel that Guerra should have emphasized is that with FM 128, two disk drives can be used to their full potential. I've configured my FM 128 setup as unit 1 so all files are loaded and saved through my 1581 disk drive (device 9), while all fonts, character sets and the program itself are accessed through my 1571 (device 8). This provides a beautiful setup and fully eliminates the chore of disk swapping.

I find Fontmaster 128 the best, by far, of the numerous word processors I own.

On another subject, I read with interest Tim Walsh's reviews of database programs in "Database Decision" last October. One point he failed to mention with regard to Data Manager 128 is its lack of dual drive support. In more than one place in the manual, Timeworks states that DM 128 "is designed so that a single drive is as efficient as a dual drive." Frankly, I find this a cop-out. DM 128 would certainly be faster and more efficient if Timeworks had provided a dual drive option.

—Robert L. Arceneaux
Lisbon, Portugal

Productivity Plus

There are those who say "you just can't win," but I say "with *RUN*, you just can't lose!" Last year I bought Productivity Pak II for the upgrade on Mike Konshak's Datafile series. So what did I get? Datafile—plus a bunch of other useful programs, including RUN Script. This year I ordered Productivity Pak III to get the latest on RUN Script and found RUN Calc, RUN Investor and RUN Notepad, as well. As I said, with *RUN*, you can't lose.

—L. M. LaBar
Bethlehem, PA

Trapping the Save-with-Replace Bug

I'm beginning to shop around for a second disk drive, so I read with interest Tim Walsh's review of the Excel 2001 in "A 1571 Clone Is Here!" last December. However, what interested me even more was the sidebar about the 1571 ROM. Let me tell you why. . .

I've been a C-64 owner for a long time and have used the Save-with-Replace command without any problem—until a couple of days ago. I was quite proud of myself, having just made the final modifications to the first program I ever wrote from scratch. As usual, I just typed DSAVE"@REPORT" and turned everything off to go do something else.

When I came back and tried to use my program, I was, to say the least, surprised. What I loaded and ran wasn't the final version of the program, but the previous version. I pulled up the directory and, of all things, there were two versions listed: REPORT and @REPORT! It looked like the legendary bug had, for the first time, bitten me.

As I suspected, the @REPORT file, containing the final version of my program, wouldn't load unless I used the wild card (DLOAD"?REPORT"). After I saved the program under a different filename, I scratched the @REPORT file the same way (SCRATCH"?REPORT").

—Eric R. Pickell
Crystal Lake, IL

A Call to Readers

Send your letters to Mail RUN, 80 Elm St., Peterborough, NH 03458. Each letter must include the writer's name and complete address. RUN *reserves the right to edit letters for style, clarity and space.* ■

RUNning Around the World

It's time again for RUNning Around the World, Mail RUN's listing of readers who'd like pen pals on computing subjects. This feature appears every few months, and since the last time, ten more readers in the U.S. and other countries have asked to have their names included.

If you'd like your name listed in a future RUNning Around the World, send it and your address, along with the type of Commodore you have and your particular areas of computing interest, to Mail RUN, at the address listed at the end of this page. Just be sure your writing is legible.

United States

Don Hertz
1206 Killarney
Greenville, IL 62246
C-64; games

Dee Ewing
PO Box 12076
Springfield, IL 62791-2076
SX-64, C-128; business applications, telecommunications, public domain software

Regina K. Staton
224 Sycamore St.
Jackson, KY 41339
C-64; everything from word processors to games

Marge Wieman
PO Box 189
Trout Lake, MI 49793
C-64, C-128; word processing, graphics

Alana Herbert
1374 Clarkson/Clayton Center
Suite 105
Ellisville, MO 63011
C-64; telecommunications, graphics

Fletcher Erickson
4926 Leighton
Lincoln, NE 68504
C-64; games, telecommunications, programming

Eric Mauser
8278 Oswego Rd.
Liverpool, NY 13090
C-64, C-128; telecommunications

Costa Rica

Marvin Vega
PO Box 516
Tibas, San Jose
Costa Rica
Games, graphics; can correspond in English, Spanish and French

France

Etienne Schneider
5, Rue des Sapins
67760 Gambsheim
France
C-64

Mexico

Cecilia Osuna Bermúdez
Calle 25 Av. 18–19 #227
Guaymas, Sonora
Mexico 85400
C-128; CP/M, programming, games

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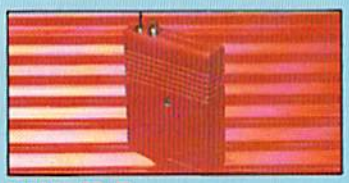

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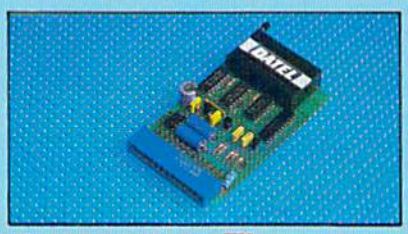

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AIRBORNE RANGER ..... A+

We're Looking for a Few Good Rangers

Load your weapon, strap on your helmet and check your parachute, because, as a member of the U.S. Army's elite Airborne Rangers, you're about to engage in battle. It takes a skilled warrior just to make it through the Rangers' grueling basic training, so consider yourself lucky—the folks at MicroProse have done the dirty work for you.

Airborne Ranger is a role-playing game in which the player is thrust into the position of a commando who must carry out a solo mission behind enemy lines. Success requires strategy, keen reflexes and an ability to make quick tactical decisions.

Those skills are employed in 12 distinct missions (each offering user-definable difficulty levels) that take place in three different climates. Each task has a particular goal—like freeing hostages or destroying a munitions depot—and some are inherently more arduous than others.

During the first phase of each mission, you have an overhead view of your airplane flying over enemy territory. Steering the plane left or right to avoid obstacles like enemy emplacements, ditches and trees, you drop three supply pods. These are filled with weapons and first-aid materials that you'll later try to retrieve. You then jump from the plane and maneuver your parachute for a safe landing.

After your ranger hits the ground, the screen changes to show a similar, but greatly enlarged, overhead view of the mission zone. Hitting the run-stop key at any time during the mission freezes the game and returns you to the original view. This is a good way to see where you are in relation to your surroundings, although it won't indicate the location of enemy troops.

Using your assault rifle, bayonet, time bombs, anti-tank rockets and hand grenades, you must fight (or sneak) your way past those troops. You can replenish your ammunition by finding the air-dropped supply pods; but, you can only pick them up as you go because you aren't able to carry everything at once.

You control your ranger using both keyboard and joystick. The keyboard (with cardboard overlays) lets you walk, run, crawl, choose a weapon or apply first aid. With the joystick, you can move your ranger or aim his weapon, and the fire-button lets him use that weapon. Throughout the mission, on-screen indicators show the weapon in use, ammunition remaining, degree of fatigue, number of untreated wounds and time left to complete the task.

A mission can end in one of three ways: your ranger could be killed, captured or accomplish his task and be airlifted back to base. If a ranger makes it home, he's promoted and available for future tours of duty.

Points are awarded for destroying enemy troops and emplacements and achieving mission objectives. Those earned points can be accumulated and saved to disk, enabling Airborne Ranger to be played one game at a time or as an ongoing adventure (until a ranger is killed in action).

Either approach reveals outstanding graphics and animation. Images of soldiers, ditches, rocks, trees, tents and barbed wire are all clear and distinguishable. Soldiers move realistically, and you can even hear the footsteps of enemy troops as they approach. Both joystick and keyboard control are totally accurate.

Attention to detail is equally impressive. Fire a rocket or toss a grenade and watch the explosion send debris flying in all directions, leaving nothing but rubble. Fire your gun at an enemy soldier and the sound attracts his comrades. Try to walk through a brick wall and your ranger will be stopped cold, but move past a bush and you can almost see its branches bend.

Details like that make Airborne Ranger a joy to play and, along with its design, should ensure many, many hours of entertaiment. It combines arcade action and strategy in just the right doses. Your ranger might have the quickest trigger finger and deadliest aim in the world, but he'll also need good military strategy to survive.

It would be a mistake to plan that strategy without first reading Airborne Ranger's instruction manual. Although it comes with quick-start instructions for those who like to feel their way through computer games, the manual is a real treat and shouldn't be overlooked. The documentation ►

REPORT CARD

A Superb!
An exceptional program that outshines all others.

B Good.
One of the better programs available in its category. A worthy addition to your software library.

C Average.
Lives up to its billing. No major hassles, headaches or disappointments here.

D Poor.
This program has some problems. There are better on the market.

E Failure.
Many problems; should be deep-sixed!

STEALTH MISSION

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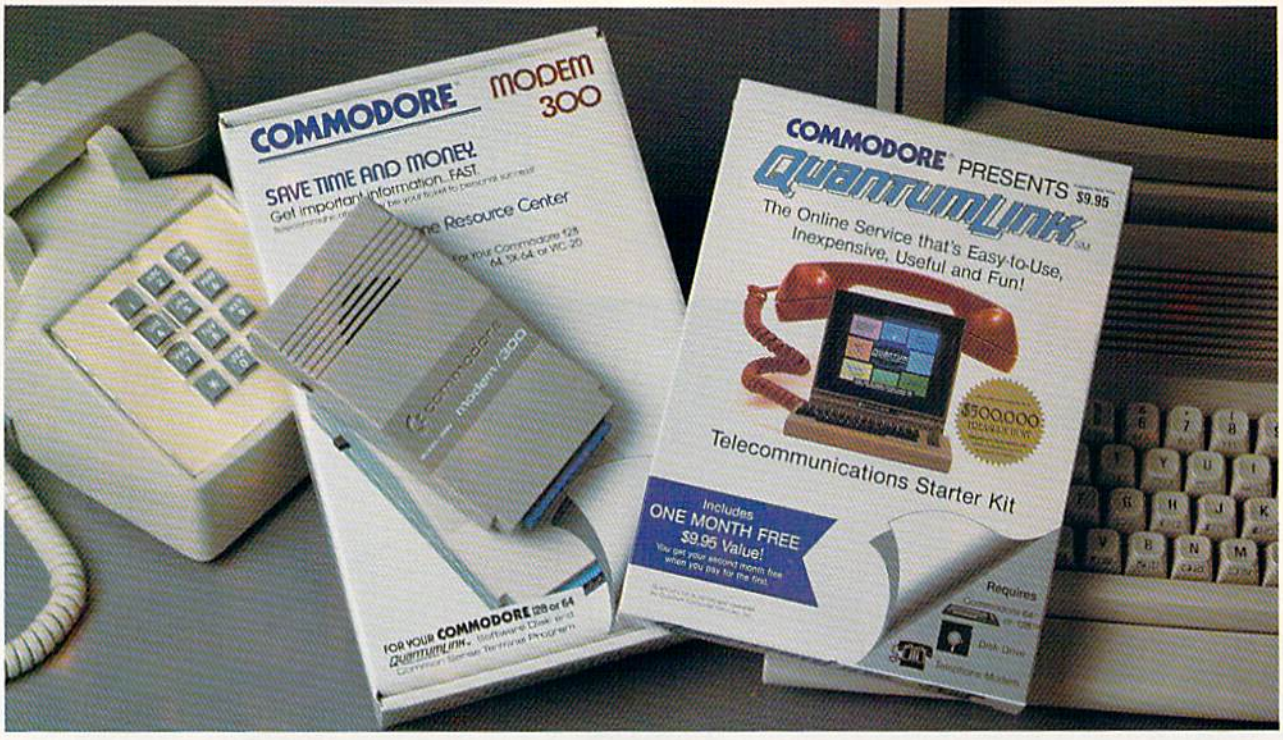
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is simple to follow and understand, yet describes just about every aspect of the game, including tactical tips for each mission. Also included is a very interesting narrative on Ranger history, weapons and training and some notes from the program designers explaining how Airborne Ranger was created.

This program is easily one of the best action/strategy games ever produced for the C-64. MicroProse has come up with a most intriguing, entertaining and enjoyable software program. *(MicroProse Software, Inc., 120 Lakefront Drive, Hunt Valley, MD 21030. C-64/$34.95.)*

—SCOTT WASSER
WILKES-BARRE, PA

B-24 ..... B+

Real-Time Flying Action Set Against a WWII Backdrop

B-24 is SSI's first attempt at a different type of war strategy game, namely, a flight/combat simulator. I think you'll find it's something much more than the usual flight simulator, strategy or arcade game.

As commander of the lead B-24 Liberator bomber, you're in charge of a formation of up to 40 planes. Your group, the 460th Bombardment, is to fly 19 missions over the Ploesti, Romania, oil refineries. Your performance is judged against World War II history—if you reduce oil production levels below those accomplished by the allies, you're told by how many days you might have shortened the war, how many lives you might have saved, and so on.

You pick the target—there are 11 sites at Ploesti, one at Campina and two practice targets at Mostar and Bucharest. You're then given weather conditions, bombing altitude, number of planes ready, production levels, where and when to join your fighter escorts, and so forth. After you decide how much fuel to take and how many bombs, it's just a matter of flying the B-24—easier said than done.

Flying is a combination keyboard/joystick operation. The joystick controls banking left and right, climbing and diving. The keyboard directs the flaps, engine speed, landing gear, bomb bay doors, dropping bombs, feathering engines, pausing the game, calling for navigational, fuel and formation information, accelerating game time by increments of two (up to 60 times the normal speed), aborting a mission and bailing out.

On screen, you have an overhead view of the plane—unlike typical flight simulators that give you a view from within the cockpit—and a ten-square-mile area of the map.

Make sure you reach your assigned altitude and meet up with your escort squadron in SSI's B-24.

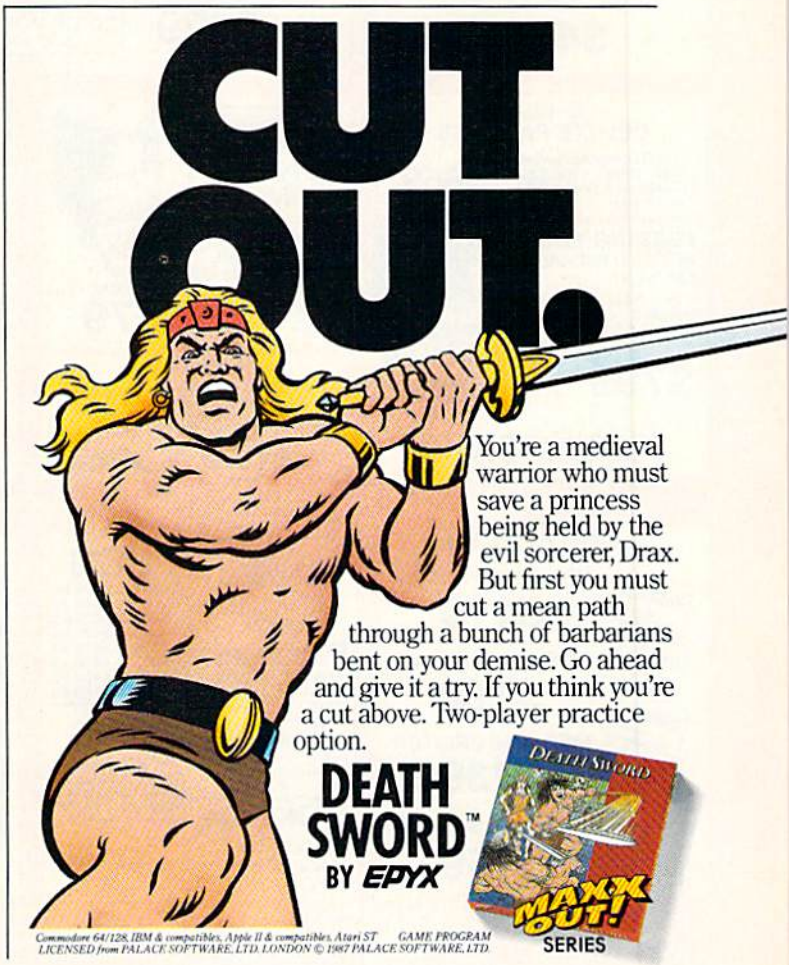
You're also shown altitude, vertical speed, heading, flap settings, landing gear status, engine speed, horizon indicator, pitch, banking, bomb sights, target location numbers and when bomb bay doors are open. Flying the plane is tricky and only gets harder if you have damage.

Once you take off, you must reach a certain altitude and air speed in order for the rest of the formation to join up with you. When they do, you have to fly to a given location in a certain time to meet up with the flight-out escort. After climbing to the assigned bombing altitude, you must then get to the next escort rendezvous point, all the while maintaining the proper air speed, avoiding areas that have flak, and occasionally running into enemy fighters.

At about 15 miles away from the target, you have to adjust your course to get as close on line as possible, which is very difficult. Near the target, you open the bomb bay doors, start taking flak, drop the bombs and get out of there! Then, it's a matter of rejoining your fighter escort at the right time and location, making your way back to the base and landing the plane—again, easier said than accomplished.

Along the way, there's a lot that can go wrong. Taking damage from flak, enemy fighters or simple mechanical failure can result in oil or fuel leaks, supercharger failure, engine, flap or landing gear loss. Or, you may lose navigation, bombing and landing instruments, not to mention that the engines have a tendency to overheat or that you could simply run out of fuel.

B-24 is a very complicated, involving game. The ability to speed up game time is handy, especially when you're flying ►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in a straight line without much action. However, when things do start happening—which is usually all at once—it's a very long game. You should fly half a dozen practice missions before you try the main game. Once you know what you're doing, each mission takes about 30 minutes, and you don't get a score until you fly 19 missions.

As with most SSI games, you can adjust the factors that make things easier, more difficult or more historical—all of which affect your efficiency ratings, which in turn affect your bombing accuracy and results. The game is rated as introductory, but I think it's more difficult than that. Real flight simulator buffs might find the B-24 a bit clumsy and awkward, but that's probably a reflection of the plane, which was often referred to as "Consolidated's folly." The overhead perspective is also different, but there's plenty of excitement to make up for that. SSI war-gamer buffs will find B-24 very light on strategy and fairly fast paced.

There are no dog fights, no machine guns, and most of the action is reactive. You adjust course and engine speed and wait until something goes wrong or until you have to adjust again or drop bombs. Ninety percent of your time is spent getting to exactly the right place at the right time at the right altitude at the right air speed. Bombings and landings are tough: the rest takes practice and a little luck.

B-24 is a very good game. You'll find yourself cursing the flak, the superchargers and the weather. You'll cheer when the escorts arrive or shoot down enemy fighters for you. You'll start praying that you'll have enough fuel to make it back and find yourself trying to coast those last few miles rather then bailing out. And you'll break out in a cold sweat as you get closer and closer to the target, your finger poised over the button, ready to drop the bombs. *(Strategic Simulations, Inc., 1046 N. Rengstorff Ave., Mountain View, CA 94043. C-64/$34.95.)*

—GUY WRIGHT
AMIGA WORLD STAFF

LADDERS TO LEARNING: SORTING, TRIANGLES, BONES AND JOINTS ..... B+

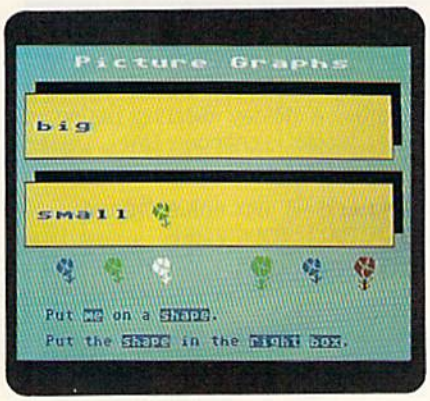
Circle or Square? Scalene or Isosceles?
Lumbar or Tibia?

McGraw-Hill (Australia)'s Ladders to Learning educational series offers a well-designed, entertaining approach to tutorial and drill programs. The series encompasses 73 disks that cover a broad base of topics for varying age groups—everything from spatial concepts and introductory learning skills for younger children to memory and library skills for older students. Specific subjects like math, science, English, history and geography are also offered. The three disks I reviewed include sorting shapes and colors for children ages three through six, triangles for students ten to 13 years old, and bones and joints for the ten-plus age group.

The first aspect of the lessons that will probably strike you, as it did me, is the excellent use of graphics and color. Simple illustrations are clearly presented for younger children, while more complicated diagrams are outstanding in their detail for older students.

At the opening screen, each disk gives you a choice of two learning sections—a tutorial section and a game (drill) section. The tutorials are versatile and well-suited to their intended age range. The lessons flow smoothly from basic information to the more complex stages within each subject. For example, the triangles program starts out with a picture of a sailboat and a cartoon character to catch the ten-year-old's attention, and promptly engrosses the 13-year-old by illustrating how the boat can be divided up into various kinds of triangles. It's amazing to me how the program does this without losing the focus for either age.

To draw the students' concentration into the bones and joints program, the authors present information in various type fonts. In this session, options progress from introductory lessons on bone and joint functions to more difficult exercises on names of bones (ordinarily learned in high school and college). ►



Children can identify with the colorful shapes and pictures in the Ladders to Learning Sorting disk.

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The sorting disk is *not* a substitute babysitter for youngsters: It contains an instructional section that stresses parental interaction in the child's learning process. Lining up shapes and colors helps develop eye-hand coordination. Besides being applicable for shape recognition, sorting can be used as a counting, spelling and reading aid. (If any of these disks are used as spelling aids, watch for the European spellings that occasionally pop up—like armour and metre—in the older students' disks.)

The younger children's drill in the sorting program is an appealing little maze game, where the child must sort out the shapes before the Shape Muncher or Shape Painter can get to them first. Ample time is given for this task.

By neatly tabulating results for the student, the triangles drill section teaches organization of numerical calculations. The more sophisticated drill in the bones and joints program questions students with appropriate pictures, then awards points for correct answers. From there, it further determines if they can keep their points by leading them to sites that offer more points or questions. I found the drill sections of all the disks to be at the appropriate level of the age group involved.

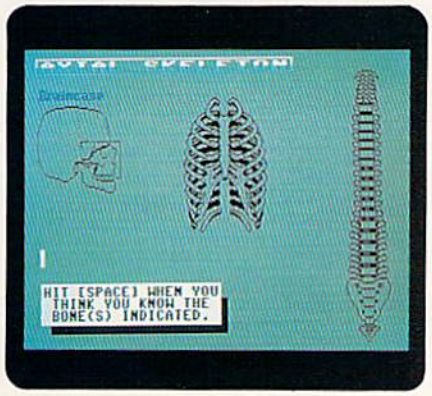
The sorting disk can be operated either through the keyboard or with a joystick, but I suggest a joystick for the younger child (it shouldn't be *required*, as stated on the packaging). The programs for the older students use the keyboard only. The one or two keystrokes needed to operate them are easily learned and remain consistent.

Music is played at all levels—a happy tune or a ringing bell for right answers, and an amusing series of three deep, bass tones for a wrong answer. The right answer is provided after two wrong tries. A strong point of the triangles program is that it displays the mathematical method of obtaining the correct answer. This is a wonderful addition because I often find that math software doesn't provide this, which is frustrating to the student.

The software is fully compatible with Epyx's Fast Load cartridge and is not copy protected. I found a few inconsistencies, however, that keep me from assigning a grade of A to these disks. On the sorting disk, the opening screen contains a blinking ball next to the menu of activities. I'd like to see on-screen or packaging instructions to plug the joystick into port #2 or to use the cursor and return key to move the ball.

On the triangles disk, there are a few instances where numbers don't line up correctly in a column: 9 lined up under the 1 in 17 instead of under the 7. Also, the term breadth is used when introducing the formula for the area of a triangle, but later changed to height, which is correct. And just once, in the older disk, I caught use of the word revise instead of review when asking the student which activity he or she would like to move on to. However, these are minor flaws, and I believe that the programs represent an excellent value for the price. *(McGraw-Hill, Australia; distributed by Combase, Inc., 333 Sibley St., Suite 890, St. Paul, MN 55101. C-64/$19.95 each.)*

—EDITH CHASEN
WOODHAVEN, NY



The rib bone's connected to the. . .fill in the blank with the Ladders to Learning Bones and Joints disk.

THOUGHTFORM, VERSION 1.81 ..... A

A Useful Application for People Who Need To Organize Their Writing

A good computer application program should save you time, provide information and be easy to use. That is what Thoughtform, a C-64 outline processor, promises and delivers. If you plan to write a thesis, term paper, short paper or an outline for an oral presentation, this program can be of help.

Thoughtform is a machine language program that comes with its own fastload utility. After you've loaded the 104 block program, you're presented with the initial menu and can choose to start a new file, read an existing file or browse. (Each file is stored on your own formatted disk.)

Suppose, for example, you've done some research and prepared your ideas. It's time to start a new file. You first type in the title—called the summit line—then your main ideas and supportive facts, both called headlines. You create an outline by using control/R and moving the support facts under the main ideas. Next, if you want to reorganize your ►

BUG OUT.

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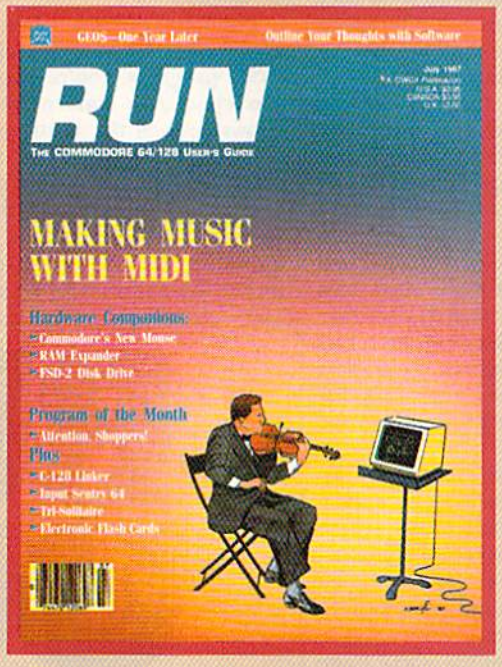

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ideas further, use block copy, block move and block delete. Finally, you can add blocks of text in sentence format.

Plus (+) denotes headlines with supportive facts below. The degree of indentation denotes the relative importance of any headline in the outline. Minus (–) headlines have no further supportive facts. Blocks of text can be inserted below plus or minus headlines; they're denoted on the screen with vertical lines bounding them on left and right. You can continue adding main ideas, supportive facts and text blocks until you're satisfied with your outline.

Thoughtform is a well-conceived program. You can add, change or move any lines on the screen singly or in blocks, and you'll find some unique features, such as letting you add blocks of descriptive text and view only the plus lines on the screen.

Thoughtform also uses an unusual filing concept. When you're working with a previously created file, the plus statements load first. This lets you review your main ideas. You can then expand your on-screen outline to its full size. You should first practice this with the impressive demo file on the disk.

The cursor keys work in their normal fashion, and the control key combinations are easy to understand. If you forget any combination, the help screens, which appear as windows, are only a few keystrokes away.

For final documentation editing, you can easily transfer your outline from Thoughtform to your word processor format by using the Export program provided on the master disk. This will also back up your master file to the same or another disk.

Printing options include three sectional headers and/or footers. Your printouts, which look quite professional, can be in outline, engineering or plain format. The operation section found in the accompanying manual is clear and informative, as is the entire text. There's even a section that describes outline terminology.

```
+ The New Toys for 1987
  - By Saul Cohen
    + Introduction
      The purpose of this paper is to
      present facts about the latest in
      toys on the market. These toys fall
      into the several categories listed
      below.
    + General Facts
      - Toys encourage imagination
      - Toys teach motor, thinking,
        counting, and reasoning skills.
      - Toys have controlled conse-
        quences
```

A portion of a Thoughtform outline as it would look on the screen.

Thoughtform has already worked its way into my utilities. I think it's an efficient way to organize materials. For this reason and for Thoughtform's ease of use, I recommend it. *(Steven J. Gollery, 45828 Emerson St., Hemet, CA 92344. C-64/$29.95.)*

—SAUL COHEN
AMBLER, PA

VEGAS GAMBLER ..... B

C'mon, Lady Luck! This One's for Real!

At first, I wasn't under the impression that Vegas Gambler was as realistic a casino game as it claimed. After all, my $500 bankroll had ballooned to $3920 at the blackjack table and roulette wheel.

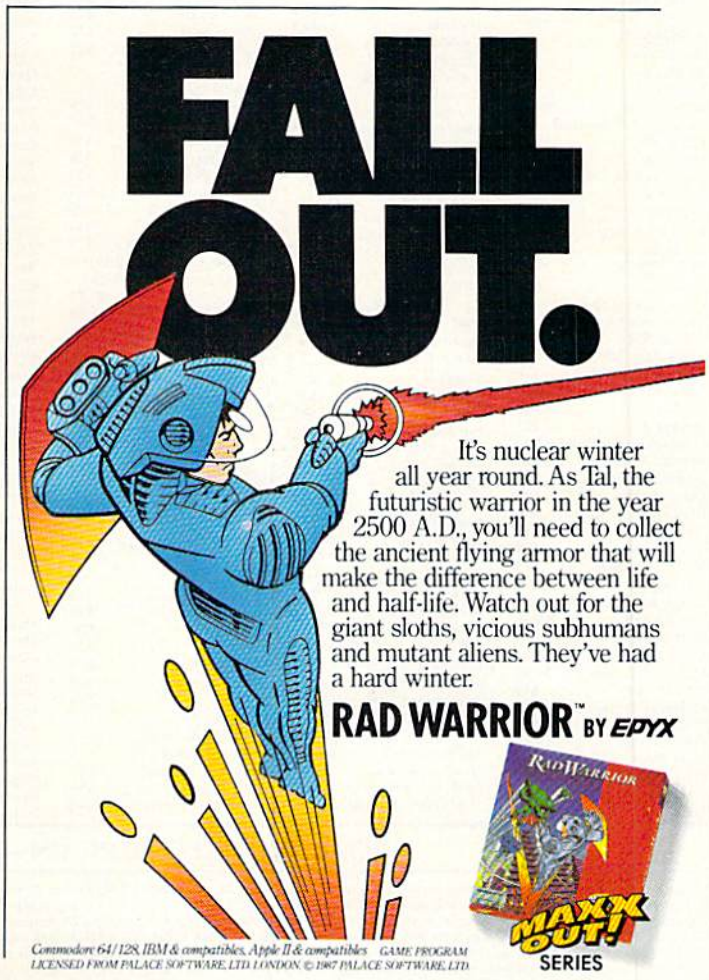
But, it's realistic enough to make you want just one more crack at beating the odds. By the time I left Vegas, my balloon had burst. The "no money—no gambling" screen appeared showing a man with his trouser pockets turned inside out. The casino asked if I would like to float a loan to continue gambling.

Vegas Gambler is yet another trip to the casino for the C-64. Although its four games are made for one player, this is a realistic visit to the slots and tables; sometimes to the point of being just a little *too* genuine.

For example, you must drop dollars into the poker and slot machines by using a gloved-hand pointer, guided with the joystick. If the coin isn't lined up just right with the slot, it falls off the screen. It's a cute touch, but when working with a joystick, this gimmick wears thin. Fortunately, you need only feed the machine once to set the bet, and clicking the fire-button lets the current bet ride. If you want to change the bet, you start at zero and drop coins again.

When one dollar is bet on the slot machine, winning combinations pay off only on the middle of the three lines. With a three-dollar bet, you win when the combinations appear on any of the three horizontal lines. Betting five dollars will result in payoffs if combinations appear on the diagonals.

The poker machine starts with five cards down. A bet of one to five dollars turns them face up—there's that ►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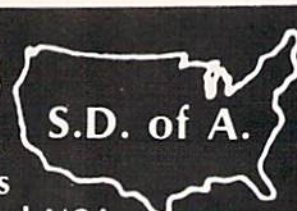

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gloved hand again! You decide which cards, if any, to keep. Jacks or better pay off one-to-one; other hands pay correspondingly higher odds.

Blackjack is played using four decks of cards. Pressing the F1 key before the beginning of a hand shows how many of each kind of card have been dealt up to that point—a handy feature for cardsharks trying to perfect their counting system.

The minimum bet is two dollars; the maximum is $200 per hand. The bet is adjusted by moving the cursor over one of two chips representing two- and ten-dollar increments in the bet. Several play options are provided, including letting two cards of equal value split into separate hands; taking insurance against the dealer having blackjack when an ace is showing; doubling the original bet; and taking one additional card to add to the one showing.

In roulette, all bets are placed using the gloved-hand cursor. Each bet requires going to the chip pile, picking up a chip, moving to the table and dropping the chip. Chip values can be set individually in one-dollar increments. Thus, you might have a stack worth $20 on the "red," and another worth five dollars on number 24.

Up to 50 chips can be on the table, as long as their total value doesn't exceed $200. There are many betting options: red or black; odd or even; individual numbers (including 0 and 00); low numbers (between 1 and 18); high numbers (between 19 and 36); corners (chips placed at the intersection of four adjacent numbers); and so on.

You'll enter the next game with the same bankroll with which you left the last game. Big bankrolls can be saved to the game disk and loaded at the beginning of the next session.

Vegas Gambler isn't copy protected in the usual sense of the term. After about five plays in the casino, a message appears on the screen asking the player to find a certain number located next to a letter on a card that came with the game. Once answered, the game continues uninterrupted for the remainder of the session.

That system allows easy backup of the game disk, but it can be a nuisance, particularly if you've misplaced the card. Best fold it in half and keep it in the disk jacket.

Even with the minor annoyances of the copy-protection card and the need to do everything by moving a gloved hand with the joystick, Vegas Gambler offers entertaining sessions with four popular casino games. *(Logical Design Works, Inc., 780 Montague Expressway, #403, San Jose, CA 95131. C-64/$29.95.)*

—LONNIE BROWN
LAKELAND, FL

PAPERBOY ..... B–

Arcade Action Makes the Grade on Your C-64

Paperboy is the kind of program that leaves a jaded computer software reviewer like me scratching his head. The problem is that when Paperboy is judged according to the criteria reviewers use to evaluate entertainment software, it comes up short in many areas. However, it is so outstanding in one respect that it makes you want to forget everything else: Paperboy is one of the most addictive computer games since Pac-Man.

Forget about sophisticated game-play scenarios and state-of-the-art graphics or animation. Paperboy doesn't offer anything special in those areas. If you're the average computer game player, however, it will give you hours and hours of entertainment for your software dollar.

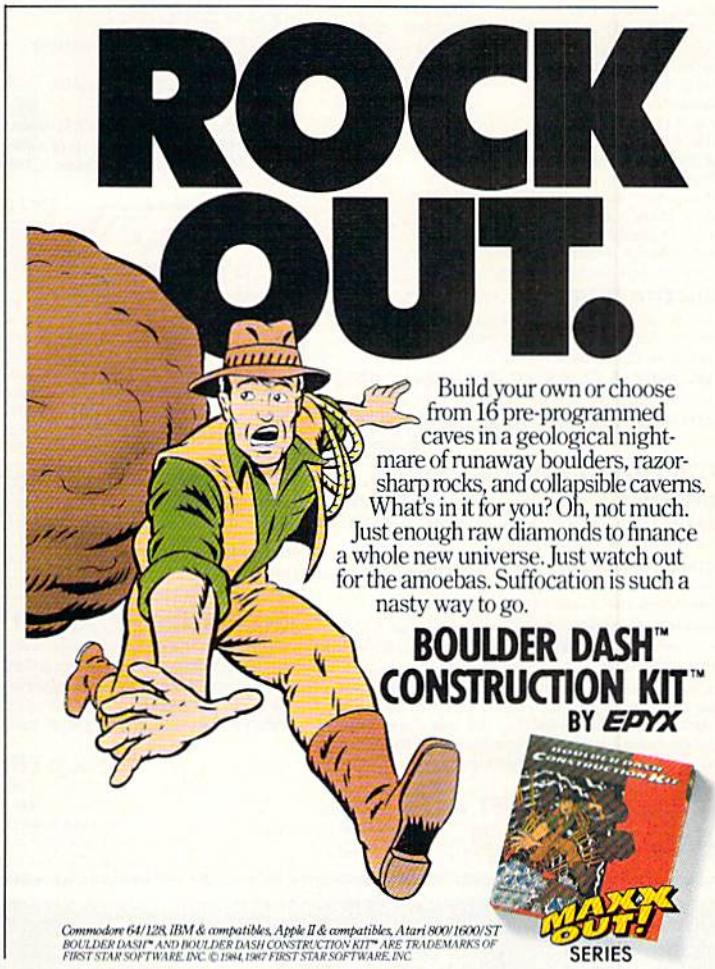
One of the nicest things about it is that it's incredibly simple to learn. Your joystick-controlled, bicycle-riding paperboy makes his daily rounds on suburban streets. You score points by firing your newspapers into subscribers' paper boxes while avoiding obstacles like vicious dogs, oncoming cars and kamikaze skateboarders.

Paperboy features screen animation that scrolls from top to bottom. Your view is from three-quarters overhead and, because the background (streets, houses, and so on) runs diagonally on the screen, you get a pseudo three-dimensional effect.

Although the joystick controls only four different movements, each is crucial to the game. Eye-hand coordination is very important. To be successful, you must learn when to go left or right, to ride on the street or on the sidewalk, and to vary your pace so that the paperboy is accelerating or decelerating at the right times.

The designers of Paperboy deserve credit for producing one of the few C-64 games that takes advantage of the C-128's auto-booting capabilities, although there's no mention of it in the instructions. It takes only seconds, not minutes, to load.

Paperboy's other attributes include a wonderful musical score, good graphics and clever introductory and exit screens that depict a newspaper with changing headlines. After a good performance, for example, you're greeted with a headline that ►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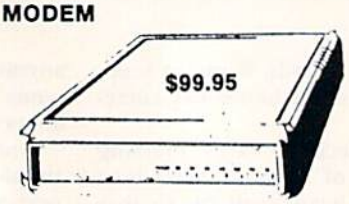

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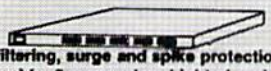

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displays the proclamation: "Amazing Paperboy Delivers."

However, other features are conspicuous by their absence. It only offers one difficulty level and no play options, features you usually find in games of this genre. Also, while the graphics and animation are generally good, screens occasionally flicker, characters sometimes appear to pass through one another and the bottom half of the on-screen running score is cut off.

Also, record-breaking scores can't be permanently registered; the number of remaining lives isn't shown on the screen; and the instruction sheet is incredibly uninformative.

Under normal circumstances, those shortcomings would be considered serious, and they'd be reason enough to give a low rating to most computer entertainment software. However, Paperboy is so habit-forming that these problems are surprisingly easy to overlook. *(Mindscape, Inc., 3444 Dundee Rd., Northbrook, IL 60062. C-64/$34.95.)*

—SCOTT WASSER
WILKES-BARRE, PA

RAINY DAY GAMES C

Concentrate on Going Fishing or Playing With the Old Maid

As illustrated by the Trivial Pursuit craze and the proliferation of home video machines, items from the past and high-tech equipment both have prominent places in popular culture. Rainy Day Games combines these two seemingly contradictory elements by translating three time-honored games for children into a computerized setting.

The software is for ages four and over. It provides for keyboard or joystick control, on/off sound, three difficulty levels and the saving of selected options to disk.

A character named Ted Bear stars in each of the program's three games. In the version of Old Maid, a child has an animated monkey turn over one of Ted's cards. Unless it happens to be the Old Maid, the selected card is removed from the screen along with its match from the youngster's hand. Then it is Ted's turn to have the monkey pick from the child's cards. The game ends when only the Old Maid remains on the screen.

In Go Fish, the monkey shows a player-selected card to Ted. If Ted holds its mate, both playing pieces disappear. If not, the child is dealt a new card. The player receives another turn if his or her choice duplicates a card from either Ted or an on-screen deck; otherwise Ted takes control. The game ends when the player or Ted runs out of cards. The winner is whoever has made the most matches.

Unlike the other two contests, Concentration lets up to three players vie with each other and the computer. Its goal is the matching of two cards that are chosen during each turn. Screens with either 14, 30 or 50 cards are available. Once again, Ted Bear strives to best his human competition. Concentration ends when all of the playing pieces have been paired.

The greatest shortcoming of Rainy Day Games is its lack of variety. The sound effects, for example, are essentially the same throughout the program. Also, the same card faces not only appear in all sessions of Old Maid, but many of them also turn up in every round of Concentration and Go Fish as well. In fact, the only graphics that work exceptionally well are animations of Ted Bear and the monkey; without them, there is little to distinguish the software from cardboard versions. *(Baudville, 1001 Medical Park Drive SE, Grand Rapids, MI 49506. C-64/$29.95.)*

—MARILOU LATOCHA
OAK PARK, IL

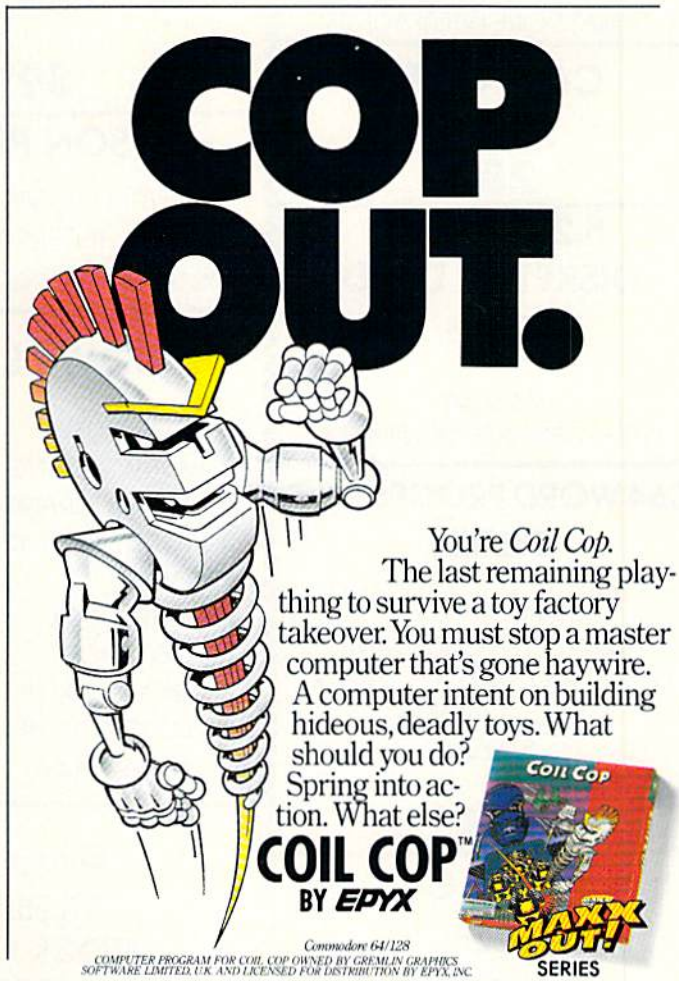
SANXION ..... B–

High-Speed Arcade Gameplay Challenges You To Defeat Alien Invaders

When hordes of evil alien warships start raining death and destruction on your home planet, you really have only two choices: Boot up your favorite word processor and type in a goodbye message; or, hop into your trusty rocket plane and put up a good fight!

In Sanxion, your objective is to complete patrols of all 20 planetary sectors. Knocking out the enemy's Primary Force involves ten combat sequences. From there, you can move on to the Dark Side for a series of ten additional battles to scotch the Secondary Force. Fortunately, you don't have to shoot every enemy ship in the sector to complete a patrol—just make it to a distant ReGen station. Unfortunately, there are a lot more of the bad guys than there are of you. Happily, the firepower edge belongs to the good guys: Each button press launches a missile, of which you have an unlimited supply. Sadly, the invaders don't shoot; their ships are missiles and any contact is fatal.

Piloting your Sanxion-class fighter against a scrolling ►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backdrop, you soon encounter flights of bobbing and weaving enemy ships; slower moving, practically indestructible, boulders; and occasional drones, which zip into view from behind! Anything you kill adds points to your score, but the big payoff comes for getting to the ReGen station before the on-screen countdown timer reaches zero.

Sanxion offers a plethora of colorful, interesting backgrounds, smooth animation and good sound. Besides rapid acceleration and deceleration, responsive controls permit up/down movement, and you see simultaneous side and top views of the action.

Fun to play? Well, that depends upon whether or not you need to believe that there is a reasonable chance of winning (there isn't) or are satisfied with staging a high-score competition when scores aren't saved to disk.

Unfair, yet sinfully addictive, Sanxion is just perfect for the hotshot stick ace who boasts "I can beat any game!" *(Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404. C-64/$19.95.)*

—JEFF HURLBURT
HOUSTON, TX

WARGAME CONSTRUCTION SET ..... C+

Test Your Combative Creativity

Maybe you want to design the ultimate space war game, but you're a far cry from being a top-notch programmer. You feel that on the surface, war games and simulations don't seem quite as programming intensive as arcade games, but there's still a lot going on behind those keys, and it would take forever to learn how to write one. But not with Wargame Construction Set.

The idea is for you to tackle the hard part, designing, while letting Wargame Construction Set take care of the basic war-game programming features. The Set also comes with eight battles—five solo and three two-player games—that are good stand-alones and should keep you going for quite a while, even if you never design your own.

The Set's Editor lets you design every aspect of a game, as long as you stick to the basic game system: Observation, Fire, Movement, Enemy Fire, Friendly Fire, Enemy Movement, Friendly Movement, Victory and Save Game phases. This is probably the easiest system to learn, but not the easiest to win. Features of the Editor include printing the map, choosing the scale of the game (tactical, operational or strategic) and allowing for artillery fire.

In the Draw Map section of the Editor, you can draw roads, rivers, bridges (intact or blown), buildings, forests (sparsely or densely wooded), mines (visible or hidden) and victory squares, where extra points are awarded for occupying them during the Victory phase.

The Edit Unit sections (one for friendly and one for enemy units) let you adjust features like firepower, defense, movement points, strength, range, type of vehicles, ammunition and manpower. You can even have sounds change as artillery fire goes from small to heavy. If you finish with that unit and don't want to customize further, you can duplicate units. In the Deploy Unit section, you place the pieces on the map where you'd like them to start the game.

You're given an extra attribute when designing an enemy unit in a solo game—aggression. You choose a value from zero (the unit won't move) to seven (the unit counterattacks).

You'll soon appreciate how complicated war games can be. There are dozens of subtle and not so subtle balances in any game. You'll end up revising, playing, revising and playing over and over again.

Along with the great features, there are a few flaws in Wargame Construction Set. The play system is a bit restrictive: it's good for beginner and intermediate level games, but not advanced simulations. The product states that you can design anything from catapults and castles to lasers and space battles, but your aliens and siege engines all end up looking like soldiers and tanks. The scale adjustments suffer the same way; Indians or armies still look like soldiers and tanks.

Other minor blemishes include the number of disk swaps you have to make to create, edit, save and play games. The system is unclear, so best go through a very small test run before you spend nine hours designing a masterpiece, only to find out that you didn't save it correctly. And, even though there are dozens of options and things to tinker with, you'll soon wish there were more.

On the positive side, yes, you can plan and enjoy your own game simulations. The editing system, while involved, is fairly easy to learn. And as mentioned before, the games on the flip side of the disk are good.

In sum, Wargame Construction Set is a remarkable piece of software, but war game manufacturers shouldn't have too much to worry about. *(Strategic Simulations, Inc., 1046 N. Rengstorff Ave., Mountain View, CA 94043. C-64/$29.95.)*

—GUY WRIGHT
AMIGA WORLD STAFF ■

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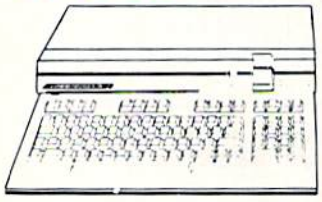

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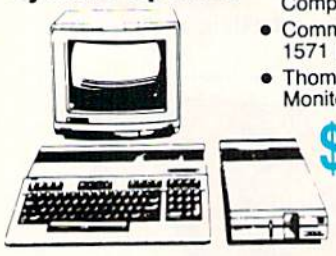

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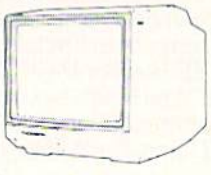

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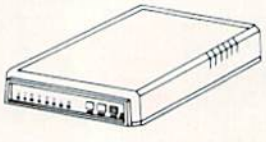

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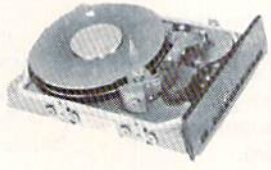

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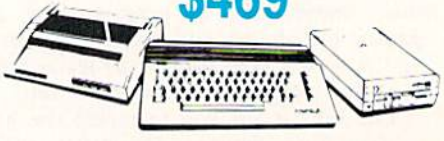

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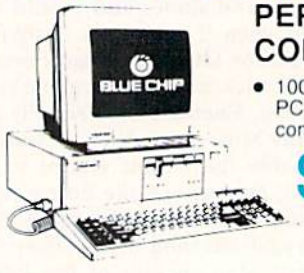

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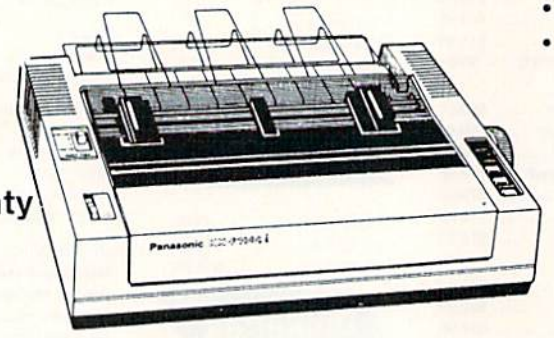

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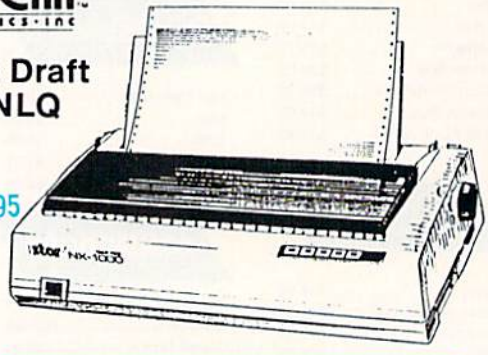

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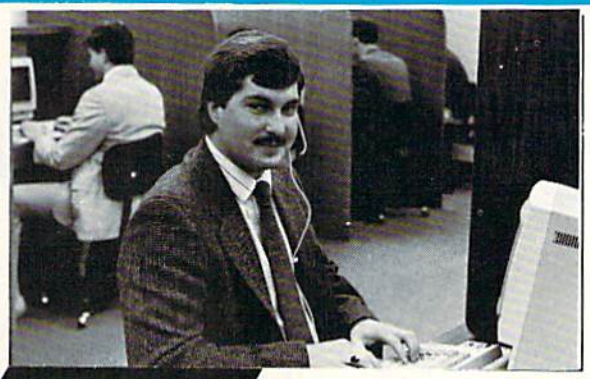

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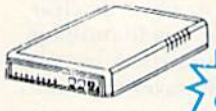

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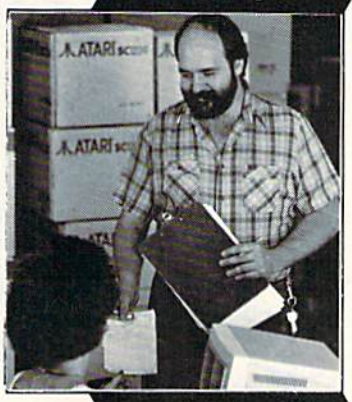

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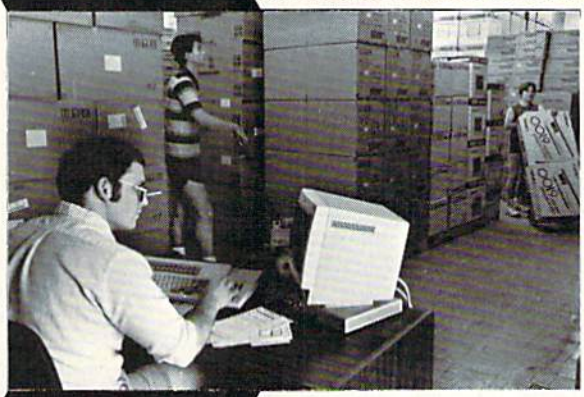

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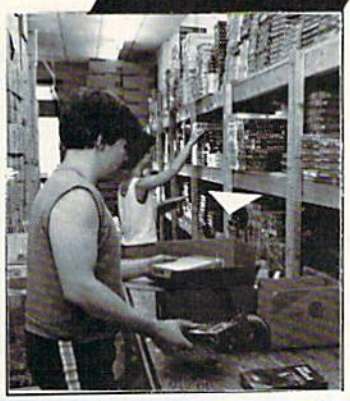

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Desktop Publishing With the C-64

By SUSAN LAMB

Discover how you can produce your own documents with a Commodore system.

WHEN THE CONCEPT of desktop publishing first surfaced, many people saw its primary purpose to be the largely in-house production of business publications, an undertaking normally requiring sizable investments in equipment and software. But that picture has changed.

Now, with a low-priced Commodore 64 or 128 system, including a good printer, almost anyone can become a desktop publisher. Whether you produce a newsletter or a book of poems, an ad, a flyer or a greeting card, the computer enables you to communicate in an interesting and original way. And you can do it all yourself, acting as editor, designer, typesetter, proofreader and production chief.

Creative Expression on a Desktop

An aspiring desktop publisher can turn out printed material for personal use or actually create a small business on a shoestring. Although using an expensive and sophisticated IBM or Macintosh system may be faster, the C-64 or 128 owner can produce documents that look just as professional. All it takes is patience and work, and you can produce—for yourself or for others—inexpensive, camera-ready layouts for advertisements, flyers, newsletters, catalogs or other printed material. Printing your own stationery and keeping your books with the computer further reduces start-up costs.

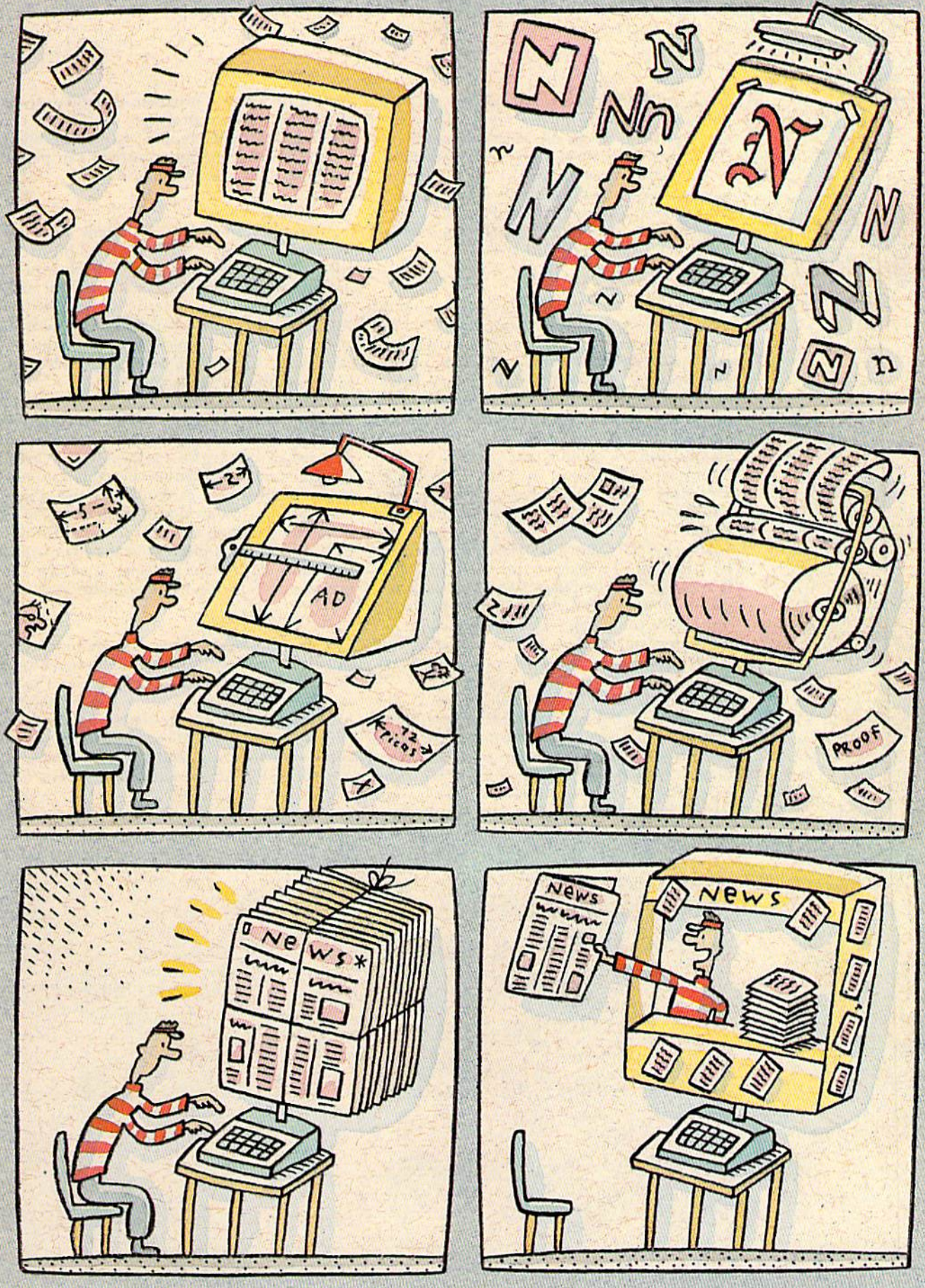
In addition to cost savings, publishing with the computer is very time effective. Instead of waiting for the material to come back from the typesetter, the artist or the printer, and then having to send it back because something's wrong, you are in complete control. You can correct, change, redesign or update your documents at your own pace, and use the time saved to be more productive.

Hardware

By starting your desktop publishing business with hardware you already own, plus some new software, you can save substantially on start-up costs. A basic system consists of the computer, disk drive, printer and software. If you don't have and can't afford a monitor, a TV will do, although it's far less satisfactory. I've found that a monochrome monitor is best, since its clear delineation of the pixels enables you to position the drawing tools far more accurately. A second disk drive, if you can manage it, saves time and makes file handling easier.

Once you start making profits with your basic system, you can afford to add new hardware and software. For example, a RAM expansion unit is almost a necessity when using the GEOS pro- ►

ILLUSTRATED BY MICHAEL BARTALOS


AD
PROOF
News
News
News*

Letterheads are simple once you have a logo designed.

gram, geoPublish, and it can support more sophisticated software in the future. The Commodore 1351 mouse is also especially useful with GEOS, making it obvious that GEOS was meant to operate this way. It gives you accurate, fast, one-hand operation that makes using a joystick seem awkward by comparison. Finally, to add a photographic capability, you might consider investing in a video digitizing system.

Software

People have actually been doing desktop publishing with the C-64 since before the term was coined. Programs such as Doodle!, KoalaPaint, and Flexidraw allowed the combining of text and graphics, wherewith rudimentary flyers, cards and even newsletters could be produced with a little initiative. User-friendly Print Shop and PrintMaster simplified the production of various printing projects and planted the publishing seed in many of us. The Newsroom allowed the creation of a real newspaper, with hundreds of clip art graphics to illustrate news stories.

Then Berkeley Softworks came out with GEOS for the C-64 and changed the way many of us were using our computers. We now had icons, pull-down menus and a new, friendly operating system. We could easily create documents combining text and graphics. We could actually "set" our words in different typefaces and sizes. A new direction of productivity opened up.

Now, with advancing technology, more new software is becoming available to create professional-looking documents with the inexpensive Commodore systems. Berkeley Softworks' geoPublish is giving desktop publishers the same type of proficiency and power that Macintosh owners enjoy. Other advancements allow the conversion of text created by incompatible word processors so that it can be used in a publication created by a single program. Graphics created by various software programs can also be converted for use in others, and clip art is becoming widely available so that non-artists can publish impressive documents painlessly.

Creating Logos and Letterheads

Almost any small business needs a logo for letterheads, business cards, business forms and ads. Now, with the many fonts available, you can quickly try out different logo concepts, easily changing these quick "electronic sketches" until you've designed just what the client wants. By going through newspapers and magazines, you can develop a file of well-designed, creative logos for inspiration in doing your own.

Letterheads are simple once you have a logo designed. Besides the logo and address lines, you might include a line with a company motto or a sentence describing the business. When designing logos and letterheads for business stationery, forms and business cards, it's a good idea to make the artwork proportionately larger, so the detail is clear when the print shop reduces it to the final size. Many printers, by the way, offer the beginning small-business owner a package deal of stationery, envelopes and business cards.

Business Forms

A small-business owner can save money and still create professional-looking business forms through the use of desktop publishing. Use the stock forms available at office supply stores as patterns, re-arranging the elements to suit your particular needs. The form can then be personalized with your logo and company name, and you can print copies as needed. If you need hundreds of copies, you can print out a stock form to use as camera-ready art for the print shop, but you can produce even fairly large quantities quickly and cheaply by employing a good

Table 1. Programs and manufacturers.

Commodore
1200 Wilson Drive
West Chester, PA 19380

GEOS
Berkeley Softworks
2150 Shattuck Ave.
Berkeley, CA 94704

The Print Shop
Broderbund
17 Paul Drive
San Rafael, CA 94903

PrintMaster
Unison World
2150 Shattuck Ave.
Berkeley, CA 94704

The Newsroom
Springboard
7807 Creekridge Circle
Minneapolis, MN 55435

Flexidraw
Inkwell Systems
5710 Ruffin Rd.
San Diego, CA 92123

Doodle!
Crystal Rose Software
109 South Los Robles
Pasadena, CA 91101

KoalaPaint
Koala Technologies
269 Mt. Herman Rd.
Scotts Valley, CA 95066

photocopy machine. I have even printed business cards (a dozen or so to a page) on cover stock and cut them apart with a paper cutter.

Creating Advertisements

You can use your computer to create ads for your own business or that of other small-business owners, or to run in your own small newspaper or newsletter. If you have a publication that reaches enough people, local businesses and individuals will be anxious to advertise with you. Also, magazines and newspapers may offer discounts for camera-ready art you produce yourself.

Two mistakes I've observed in computer-produced ads, especially small ones, are mixing fonts and including too much (therefore too small) copy. You'll get more variety and clarity for the reader by choosing one font with several sizes and style options. Try to develop a critical eye by collecting and analyzing good and bad examples of ads. This becomes important when you want to sell ads in your own newspaper or shopper. Re-do a prospective customer's ad running in a local publication, improving it every way you can. Then, when you present the layout to him, exactly the way it will look in your publication, the ad can sell itself.

Desktop Publishing Projects

There are many other kinds of things you can publish with your Commodore system: reports, manuals, brochures, catalogs, booklets, flyers, greeting cards and much more—even T-shirts and bumper stickers! Space in this introduction to the topic prohibits exploring all of these in detail, but from the hints above and those to follow, you can perhaps be encouraged to experiment; then, having gained experience, use your ingenuity and imagination to create what you want or need.

In an accompanying article, I've outlined the step-by-step process of producing a newsletter with Berkeley Softworks' GEOS. You might generalize much of what is said there and apply it to publishing other kinds of materials. Also see the bibliography in Table 2 of this article for a selection of books on desktop publishing.

To Speed You on Your Way

If you're really serious about desktop publishing, make it your responsibility to turn out the best product possible. Use a dictionary and thesaurus. Proofread carefully before the final printing. Look for well-designed pieces in periodicals and re-do them for practice. Continually observe and collect samples of what you want to create. This was the best advice given to me while studying commercial art in college. The files I've collected over the years have proven invaluable in forming ideas for new projects. Now I'm putting ideas in computer files to use with future projects.

Desktop publishing can be an enjoyable and profitable way to put your computer to use. With sufficient time and energy invested, it can be a full-time business. A year and a half ago, thinking my C-64 was on the way out, I thought that buying one of the expensive systems was the only way I could produce what I wanted. But with all the recent advances in software and hardware, I'm expanding my present C-128 system and getting very satisfactory results. I think you, too, may find that desktop publishing with the C-64 or 128 can prove to be exciting and promising. ■

Susan Lamb is a freelance commercial artist and painter—and an avid desktop publisher.

Table 2. Selected bibliography.

Designing with Type
James Craig
Watson-Guptill Publications
New York, 1971

Desktop Publishing
Frederic E. Davis, John A. Barry and Michael Wiesenberg
Dow Jones-Irwin
Homewood, Illinois, 1986

Desktop Publishing
Jonathan Price and Carlene Schnabel
Ballantine Books
New York, 1987

Desktop Publishing
Ritvo and Kearsley
Park Row Press
La Jolla, California, 1987

Desktop Publishing From A to Z
Bill Grout, Irene Athanasopoulos and Rebecca Kutlin
Osborne McGraw-Hill
Berkeley, California, 1986

A Desktop Publisher's Guide To Pasteup
Tony Middleton
PLUSware, Inc.
Colorado Springs, Colorado, 1987

Editing by Design
Jan V. White
R. R. Bowker Company, 1984

Production for the Graphic Designer
James Craig
Watson-Guptil Publications
New York, 1974

Continually observe and collect samples of what you want to create.

Watch Out, *Mac!*

By REBECCA BEGLEY

A wave of software has arrived to spur desktop publishing for the C-64.

BY NOW, JUST ABOUT EVERYONE has heard of desktop publishing, but many are still not quite sure what it is.

In traditional publishing, the production stage comprises six distinct phases. In the first, pages are designed or laid out. The layout artists decide what elements will be on a page and where to place them. The second phase is the actual production of these elements, from phototypesetting text to procuring graphics. In the third phase, galleys are proofread for errors, or typos, and corrected. In the fourth phase, the separate graphic and typographic elements are pasted onto a board, following the designer's layout.

In the last two phases, the text and graphics on the boards are proofread for content, positioning, headers and footers and cleanliness of the pages. Finally, once approved, the pages go to the printer to be printed and bound and packaged for shipping.

In desktop publishing, you use a computer and peripherals to combine the first five phases in such a way that you reduce costs drastically, shorten production time and complete all phases but the actual printing yourself.

With a desktop publishing program, you first produce a layout structure, usually using boxes, or windows, on the monitor screen for positioning, along with headers and footers. Text and graphics are then transferred or "imported" from word processor and graphics files and "pasted" into the appropriate windows. The pages are then output to a dot matrix or laser printer, bypassing the need for galley proofs, because type and graphics both can be reformatted or repositioned as required.

The three packages reviewed here—geoPublish by Berkeley Softworks, Personal Newsletter by Softsync and Electronic Arts' Outrageous Pages—may not yet have quite the professional capacity of the better-known software for the Macintosh or IBM PCs (which cost between $400 and $1000), but each has a lot to offer at a fraction of the cost. Two more software packages, The Timeworks' Desktop Publisher and PaperClip Publisher from Electronic Arts, are mentioned in the sidebar to this article, but were not yet available for review.

GeoPublish

Of the three software packages I used, geoPublish most resembles professional desktop publishing programs. While it offers great power and versatility for its relatively low price, be prepared to spend some time learning how to use it effectively. While many of the program's features are self-explanatory, especially to those familiar with the GEOS system of icons and pull-down menus, other things must be looked up, and Berkeley's manual is often inadequate as a quick, easy reference. Many of the toolbox icons are not immediately recognizable, and although they may be referred to many times in the text, they may be labeled only once and not even referenced as such in the index.

The equipment needed to use geoPublish, besides a C-64 and disk drive, are a mouse (preferred) or joystick; Berkeley Softwork's file-

conversion program, Text Grabber, to convert your word processing files to geoWrite format; Graphics Grabber, for converting Print Shop, PrintMaster and Newsroom graphics files; and the GEOS system disk.

In addition, the publishers recommend you have a RAM expansion unit, geoWrite Workshop (originally called Writer's Workshop), a GEOS-supported printer, an interface card or geoPrint Cable and a second disk drive. If you're in a tight economic situation, rest assured that, with a little planning and lots of patience, geoPublish can be effective without the extra RAM or second drive. However, if you want your type to look professional, Berkeley strongly recommends you get geoWrite.

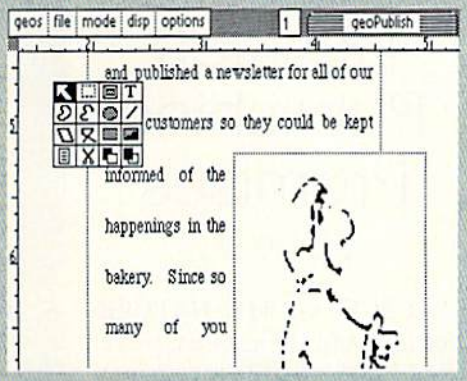
GeoPublish has three modes: Master, Layout and Graphics. The Master mode lets you create one or two master pages, that is, the elements that will be on every page, such as margins, headers, footers and graphics. You can form your own pages or select some from the library provided on the geoPublish disk (for either 60-, 72- or 80-dpi printers).

The Layout mode lets you specify more detailed layout features, transfer text and graphics and, if necessary, change the layout. The Graphics mode lets you add graphics (with some features that would be nice in geoPaint, such as the "spline" and "polygon" tools) and headline or caption text.

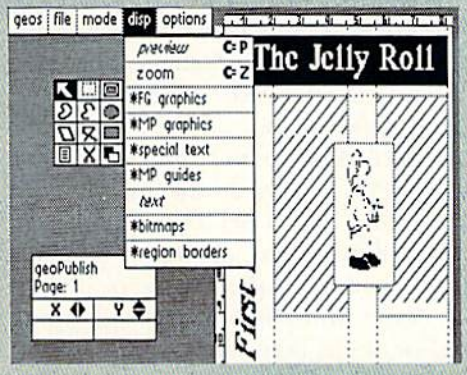
Bit-map graphics can be created using geoPaint or can be imported from other graphics programs such as The Print Shop. Bit-mapped graphics can be re-sized, stretched or smoothed out. They may also be flipped or rotated, centered in a region and made either transparent (non-destructive to other graphics) or opaque.

In addition, a laser printer may be used for output. The cheapest and easiest way is through QuantumLink, which has offered a laser printing service to geoWrite users for some time. Although the geoLaser application was not available in the review package, it should be available in subsequent versions, and I've always been satisfied with the laser printing service available through Q-link.

With some practice and some (unnecessarily inconvenient) flipping back and forth through the manual, geoPublish can be a powerful and effective semi-professional publishing tool and a bargain at the price of $69.95. In addition, Berkeley Softworks offers excellent customer support with a customer service number during office hours (Pacific Time) or after hours through Q-Link.



Using Zoom mode in geoPublish makes the page appear as it will when it's printed out.



Display Pull Down Menu shows the different options that can be seen on the screen at any time.

Personal Newsletter

Softsync's Personal Newsletter, which operates in C-64 mode, requires one disk drive (a second is supported), a joystick or mouse, a printer and the GEOS system disk. It requires a little less disk space, and some of the features (such as scrolling) work a little faster than geoPublish. Personal Newsletter comes with clip art on the system disk and an extra clip-art library disk. GeoPaint files can also be used as imported graphics. The manual is more clearly structured than Berkeley's.

However, Personal Newsletter lacks some of the significant features of geoPublish. Although text is more easily entered directly onto a Personal Newsletter page, there is no way to transfer text from a word processing file. Entering text directly on the page eliminates a step but does not allow as great a versatility in restructuring a layout. Also, Personal Newsletter does not have►

The Future: Desktop Publishing Promises

BECAUSE OF THE NATURE of the publishing beast, we're putting this article together at the same time various manufacturers are planning new desktop publishing programs. Stay tuned for future News and New Products announcements or Software Gallery reviews of the two products described below.

According to the folks at Timeworks, their Desktop Publisher will include a WYSIWYG display; that is, what you see on the screen is what you get on your printout. You'll be able to choose from built-in patterns and brushes, design your own illustrations, or import from other drawing programs. Repositioning graphics will be done with a mouse or joystick.

Type sizes are to range from nine to 36 points, with optional styles like serif, sans serif, italic, bold, underline, reverse and so on. The Timeworks' Desktop Publisher is going to have a built-in word processor, along with the ability to import text from Timeworks' own and other commercially available programs. Automatic text flow, word wrap and kerning promise to give your document a professional look.

Another WYSIWYG program should be available from Electronic Arts. PaperClip Publisher is being planned to support PaperClip, Paperback Writer, Bank Street Writer, Word Writer and other word processing formats, along with graphics formats from Doodle!, Newsroom, Outrageous Pages, Certificate Maker and The Print Shop. Drawing functions should include freehand, airbrush, built-in brush and two levels of magnification. Bold, italic, shadow, outline, backslant, mirror, sub-/superscript and reverse highlight the list of planned text enhancements.

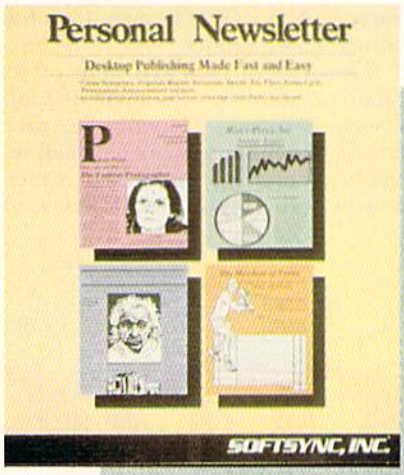
When looking toward page layout, you should be able to spill text and paint graphics into a box, link or unlink text boxes, move boxes around, move graphics within a box, size a box to reformat text or graphics, and more. In addition, you'll be able to choose from five box-border styles and 26 background patterns, define internal box margins and justify text.

If, as and when the promised programs come to light, aspiring desktop publishers should have quite a crop to choose from! R

direct graphics capabilities like drawing lines or ellipses. All graphics must be imported, with the exception of boxes. Windows in Personal Newsletter are created much as they are in geoPaint, except that the borders are printed whether you want them or not.

Personal Newsletter is strong in its ability to import graphics. It has three utilities for this purpose: Import, Scrapper and Convert. Import moves graphics files such as digitized art or Commodore graphics files into geoPaint. Scrapper creates a file that can be directly loaded into a photo album without using geoPaint, and Convert lets you import graphics from Print Shop clip art disks. It does not, however, have the rescaling options available on geoPublish.

Especially since Personal Newsletter requires GEOS to run, the fact that it's $20 less than geoPublish seems insignificant considering the features it lacks and the support and upgrades one receives with Berkeley's GEOS products. But if you're looking for something that will print out a finished product with little time and effort,



Personal Newsletter seems like a reliable, easy-to-learn product.

Outrageous Pages

Outrageous Pages is produced by Electronic Arts. It does not promote itself as desktop publishing software, but the company does promise to produce graphic art "to rival what professionals create" and to print quality text. Like Personal Newsletter, it comes with its own clip art (called "cutouts"). It also has 60 widely varying fonts and a utility for creating your own.

Outrageous Pages does not require, nor is it compatible with, GEOS. For that reason, it's an alternative for those who don't own or don't wish to use GEOS products. It employs the keyboard, a joystick or a mouse as input devices, and, like GEOS, it has icons and pull-down menus. Its manual is relatively easy to comprehend, and, like geoPublish and Personal Newsletter, it has a tutorial that guides you step by step through its various processes. Unlike its counterparts, the Outrageous Pages manual lacks an index (this reviewer's pet peeve), but the table of contents is fairly straightforward.

Outrageous's Image Editor has some of the same photo-editing features as geoPaint, such as re-sizing, flipping, zooming and rotating and, in addition, has templates for calendars, invitations and certificates. The Editor allows for both direct entry of text and graphics (using a window system much like geoPublish's and Personal Newsletter's), as well as having importing capabilities. Image Editor also strays a bit from the newsletter emphasis.

Outrageous Pages does not support laser printing and is only minimally helpful in directing you toward the correct printer driver unless yours happens to be one of the 12 printers represented. Because it's limited to dot matrix or near-letter-quality output, it cannot be considered a near-professional desktop publishing package. On the other hand, Outrageous Pages ►

Table 1. Manufacturers and prices of software reviewed.

geoPublish
Berkeley Softworks
2150 Shattuck Ave.
Berkeley, CA 94704
415-644-0890
$69.95

Personal Newsletter
Softsync, Inc.
16 Madison Ave.
New York, NY 10016
212-685-2080
$49.95

Outrageous Pages
Electronic Arts
1820 Gateway Drive
San Mateo, CA 94404
415-578-0316
$49.95

is inexpensive ($49.95) and doesn't require any other software. And, as its title implies, it's a fun approach to text and graphics.

None of the packages reviewed here offers features found on more professional desktop publishers, such as kerning (varying the space between letters), varying line space in small increments, hyphenation and measurement in metric, as well as in points and picas. However, in their relatively short lifespan, the GEOS products in particular have a history of upgrades suggesting that geoPublish might not be far behind the desktop publishing pack. ■

Rebecca Begley is a copy writer and graphic designer for an advertising agency that uses a desktop publishing system. She also works her C-64 hard at freelance writing.

geo Newsletter

By SUSAN LAMB

Here's a step-by-step guide to creating a newsletter with GEOS.

THE MENTION OF DESKTOP PUBLISHING makes many people think of newsletters, and usually the image is of a rather crude, amateurish publication. But with recent developments in software, desktop publishing can lead to professional-looking results. Whatever the content of your newsletter, typesetting makes for easier and more pleasant reading than a typewritten product.

Best of all, with the low-priced C-64, 1541 disk drive, dot matrix printer, 1351 mouse and GEOS software, almost anyone can produce a newsletter. With this combination emphasizing economy, I've achieved excellent results and overcome my financial limitations. Once you learn the techniques and gain experience, you can add hardware or software and possibly use your knowledge to publish newsletters for profit.

geoPaint Versus geoWrite

Choosing between the GEOS programs geoPaint and geoWrite depends on the form and size of your newsletter. GeoWrite allows you to type a lot of copy with ease, but doesn't let you place graphics at will. If you are creating newsletters with geoWrite, I'd recommend purchasing geoWrite Workshop (formerly called Writer's Workshop), which incorporates geoWrite and several other programs to give you much greater flexibility.

Personally, I prefer to use geoPaint for newsletters, because it makes it possible to place graphics images anywhere on the page and combine them with text. It may take longer at first, but once a format has been established and templates have been created, fitting in the text is faster and easier.

The Beginning Publisher: Step-by-Step Production

Staring at a blank page and wondering where and how to start can be very intimidating when planning a newsletter. Assuming that your text is written and you're familiar with GEOS, I'll walk you through the following seven steps: rough layout and dummy; banner and masthead; page templates; fitting copy and typeface selection; graphics; printing; and distribution.

Rough Layout and Dummy

I've found that the easiest and most accurate way to plan each page is to lay out the elements on graph paper, created with GEOS and a printer. I employ the larger grid in the lower-left corner of the fill patterns and fill each draw-

ing window on a page. This corresponds to graph paper that is 10 squares to the inch. The page lacks one pixel in both width and length, but it's not enough to worry about. Printing out this page gives you the sheets you can use to accurately plan each newsletter page.

If you find that this graph paper is too dark to make your layout, the grid can be lightened with "fill" set on a screen pattern. The fill crosshair must be put precisely on any line of the grid. Some lines may not become screened the first time, so put the crosshair on each solid line and click the mouse button. Then print the graph paper using an older, lighter ribbon. If this grid is too small for you, make up a page of square inches or half inches.

Once you've done the rough layouts for all the pages, you tape or paste them together to form a dummy. This shows the entire newsletter, how the pages relate to one another and how it'll be folded for mailing. If it's a self-mailer, the dummy illustrates where the address appears so that it opens right-side up.

If you make the dummy from the paper you'll use in the final printing, it'll give you an idea of the bulk and weight of the finished piece, which are important considerations when figuring mailing costs.

Banner and Masthead

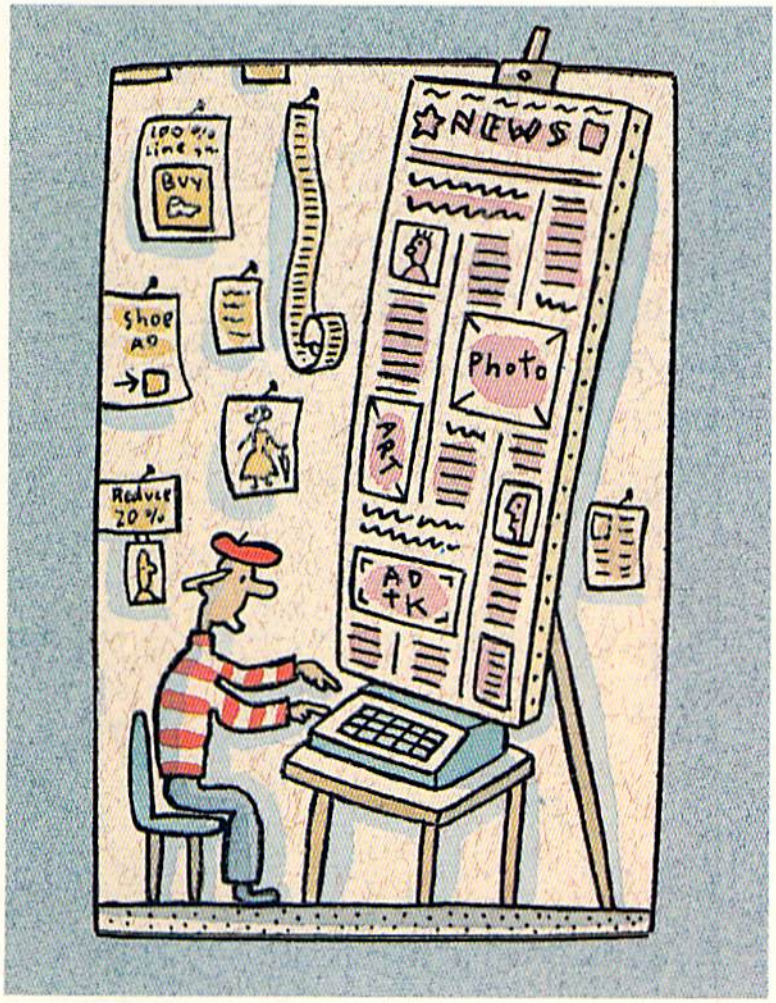
The banner, the title or identification of the newsletter, usually appears across the top of the first page. However, I've seen banners effectively placed vertically on either side of the page or along the bottom. Indicate, with a box or lines around the banner, the separation from the copy. In addition to the name, which is usually in larger or bolder type, the date and issue number, you might want to include some artwork or a slogan.

The masthead is a small box, usually on an inside page, that contains the names of the publisher, editor and any staff members or contributors. Don't forget to include the publication's address and any subscription information here. These two elements, along with the self-mailer address area, should have the same format for each issue and can be integrated into the page templates.

Page Templates

In geoPaint, every time you create a page with various elements, you have a template that can be saved and used again. The banner, masthead, address area, page numbers, department headings, editorial area, even a classified advertising section can be included in the template.

For a simple newsletter, three templates should cover all the pages: one for the front page with banner, one for inner pages of text and graphics, and one for the back page if it's to be a self-mailer. More complicated templates can be created if you've established departments that will have the same headings but different information in each issue.



I make templates by taking a page of the graph paper and eliminating the grid according to my rough layout. I use the solid box, set on white, and erase the grid up to the lines that form the template. Columns can be indicated with permanent lines or lines that can be erased after text and graphics are inserted. By experimenting, you'll find out just where to place the crosshairs for a text or edit box.

Keep templates on a storage disk and make copies whenever you begin a new issue. If you're publishing newsletters for a number of clients, make a variety of templates to keep the newsletters separate and individual. The original creation of the templates is time consuming, but the time saved when putting the newsletter together more than makes up for it.

Typeface Selection

To make your communication appealing, the text must not only be interesting, but also easy to read. This is particularly important when using fonts printed on a dot matrix printer. Before deciding on a font, check readability by printing out sections of copy in different sizes. Your choice can be improved by setting the type in ►

If you absolutely can't draw, the solution may be clip art.

bold or by using the next larger point size.

A newsletter publisher can do a lot with the typefaces provided on the original GEOS program disk. They include two Gothic (san serif) fonts, a Roman (serif) font, Computer style and Old English. These can be varied with bold, italic, outline and reverse. Although these basics are enough to get started, the additional 20 fonts included in Fontpack 1 can greatly expand your creative options. However, it's important not to mix too many fonts in your newsletter. For a clearer design, it's better to use one font or at least closely related fonts. Headlines will get more attention if set in a more elaborate or unusual font.

A serif typeface is best for the body of your newsletter. The serifs, little strokes at the top and bottom of each letter, move the eye from one letter to the next, which makes the words easier to read. Also, keep in mind that some people have trouble reading very small text.

Print out columns of the copy using the font. Measure the width of the column on your template to determine the width of the text blocks. Leave enough of a margin between columns so that it doesn't look crowded. The copy can be typed directly onto the page template in a text box, making sure it fits into your layout. Or, it can be set in geoWrite and moved to the template on text scraps. Experimentation will help devise the best method for your purpose.

Table 1. Clip art collections.

The Print Shop Graphics Libraries
Broderbund Software
17 Paul Drive
San Rafael, CA 94903
415-492-3200

PrintMaster Art Galleries
Unison World, Inc.
2150 Shattuck Ave.
Berkeley, CA 94704
415-848-6666

Newsroom Clip Art
Springboard Software
7807 Creekridge Circle
Minneapolis, MN 55435
612-944-3915

Flexidraw Graphics Galleria
Inkwell Systems
PO Box 85152 MB290
San Diego, CA 92138
619-268-8792

Graphic Idea Files
Lamb Art & Design
1764 Avenue B
Yuma, AZ 85364
602-782-3053

Graphics and Illustrations

Even the decidedly non-artistic can achieve satisfactory results when creating graphics for a newsletter. The tools in geoPaint help you generate simple graphics even if you can't draw a straight line. Actually, drawing a straight line with a computer is easy; it's the curves that are difficult.

Other than the circle, geoPaint has no way to handle curved lines, so they must be drawn freehand. I have drawn with a mouse, joystick, graphics tablet and light pen, yet I always end up doing many corrections in Pixel Edit. I have much more success by first using other graphics software that more deftly handles curved lines, and then converting the art to geoPaint for finishing.

Depending on the TV or monitor you're using, you might be creating with an image that's vertically elongated, so that it looks squashed when printed. I solve this problem by adjusting the monitor. I draw a circle and then adjust the picture until it looks perfectly round. This leaves black space at the top and bottom of the screen, but I find it far less distracting than the elongation.

When using GEOS 128 in 80 columns, this problem defies rectification. I usually draw in 40-Column mode and switch to 80 columns when composing a page and moving elements via text or photo scraps. The larger, full-page-wide scraps save a lot of time and let you see so much more of the document at once.

If you absolutely can't draw, yet want to include graphics in a newsletter, the solution may be clip art, so called because it's patterned after the books of camera-ready art that are commonly used by newspapers and advertising artists. The piece of art selected is clipped out and used as is or altered to fit a particular size or purpose. Computer art isn't actually clipped, but moved as a file to your document. With GEOS, it's moved by way of a photo scrap.

There are clip art collections from The Print Shop, PrintMaster, Newsroom, Flexidraw and others. The first three can be converted to geoPaint by using the Graphics Grabber on the GEOS Deskpack 1 disk.

I've created a clip art collection especially for GEOS that I call Graphic Idea Files. After the text is set into the templates, I go through all my clip art files and select graphics appropriate to the subject and put them into a Photo Album using the Photo Manager. To avoid sizing problems, it's a good idea to alter the artwork to fit the template before putting it in the Photo Album. Use a ruler to ensure that artwork fits into the spaces indicated on the templates. If you want to include text within graphics or have text fit closely around the art, it can be set and placed where desired, becoming part of the graphics.

Table 2. Research aids.

Eighteen Ways to Evaluate a Newsletter Idea Before You Publish and *Ten Key Steps in Starting a Newsletter*
Steve Sahlein
Promotion and Marketing
51 Villa Rd.
Larchmont, NY 10538

Oxbridge Directory of Newsletters
Oxbridge Communications
150 Fifth Ave.
New York, NY 10011
Lists more than 13,000 newsletters of various types.

Editing Your Newsletter: A Guide to Writing, Design and Production
Mark Beach
Coast to Coast Books, 1982
A no-nonsense, basic guide.

The Graphic Designers Handbook
Alastair Campbell
QED Publishing, 1983
Fundamental graphic design help.

Publishing Newsletters
Howard Penn Hudson
Charles Scribner and Sons, 1982
Excellent guide to the newsletter business.

After the copy is set on the template, take the Photo Album and strip in the graphics with the Photo Manager.

Graphs and charts are an effective way of adding illustrations to an otherwise uninteresting newsletter full of comparative figures. There are software programs that accurately produce graphs, but they must be made compatible with the GEOS format. In making up a newsletter with geoPaint or geoWrite, it's just as easy to plot the figures yourself. What I do is make a template the size of a drawing window—this can be changed or updated with each issue. You'll probably be using the same types of figures each week or month, so taking the time to make the templates is worthwhile. For most situations, the graphs don't need to be extremely accurate—their main purpose is to show comparisons of different figures or up and down trends.

Circle graphs, or pie charts, are used to illustrate a percentage of a whole figure, such as a budget. Rather than thinking of the circle as 360 degrees, I prefer to think of it as 100 percent. Therefore, half the circle is 50 percent, a quarter is 25 percent, and so on. Using the line tool, I created a template and broke the circle into portions as small as two and one-half percent. As long as your pie chart is fairly accurate and the figures add up to 100 percent, it'll serve the purpose for your newsletter.

Bar charts and line graphs show trends and comparisons from month to month or year to year. Several categories can be on one graph as long as you use different patterns or line widths to differentiate them. If you aren't experienced at making up graphs from scratch, I suggest studying newspaper examples to see which ones would suit your purposes, and then duplicate them for your newsletter.

Printing

A geoLaser printout is the ideal reproduction, but good results can also be achieved on a dot matrix printer. Each page is printed for use as camera-ready art—that is, ready to be copied. Use a good black ribbon on clean white paper and touch up any streaks with a black felt pen. The final printed newsletter will only look as good as your original artwork.

Whether you have the newsletter reproduced by a print shop or simply run off photocopies yourself depends on your budget and how many copies you need. If you need a large number of copies, it's best to go to a print shop that offers photo-offset printing. Check with local printers as to their artwork requirements and what services they offer. Your newsletter can be printed on 11 x 17-inch sheets, folded in half and stapled in the middle. Colored paper and ink are available, as well as services for binding and stapling.

Distribution

There are many ways to distribute your newsletter. If it's for a club or organization, you need the names of members for your mailing list. Other options include buying selected mailing lists or advertising in magazines and periodicals of similar interest. In a small classified ad, you could offer free information for subscribing to your newsletter, or offer a free sample copy. Selling single copies for a nominal fee will cover mailing costs and add to your mailing list. For a large distribution, check with the Post Office for bulk mailing information and rates.

The Experienced Publisher

I've presented you with the basic information you need to produce a simple newsletter using GEOS. There are many books available that explore newsletter publishing in greater detail, but you might also make a practice of collecting newsletters to analyze their different elements and formats. Reading sample newsletters, both good and bad, can give you a lot of practical knowledge for producing your own. A serious newsletter publisher takes the time to research the subject and the techniques involved in producing something people will want to read. ■

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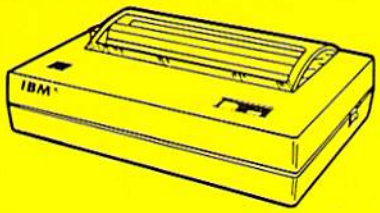

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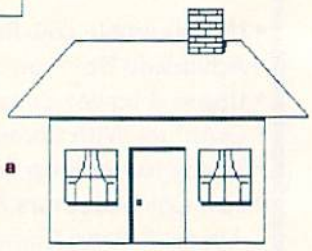
Home Inventory

Protect yourself against loss with a description of the possessions in your home, their location and value.

By IAN ADAM



Screen display of a room's contents.

When fire or theft strikes your home, nothing can make up for the feelings of disruption and violation of privacy it evokes, but at least, you reassure yourself, insurance will help cover the financial loss. However, if you've ever made a claim for lost property, you know what a frustrating experience it can be. Even if you can recall everything that was lost and describe it in some detail, you're still likely to have arguments over quality, condition and such. What's more, without hard identification such as serial numbers and dimensions, it's nearly impossible for the police to recover and return belongings.

You can avoid a lot of these problems by using my Home Inventory program to prepare a thorough list of your possessions in advance. Such a list can help you decide how much insurance you need, then speed and strengthen any claim you may have to make, as well as assist the police in recovering your possessions if theft is involved.

Two Versions

Listing 1 and Listing 2 are Home Inventory programs for the C-64 and C-128, respectively. Both versions, written in Basic, are straightforward to type in. Use the appropriate version of *RUN*'s Checksum program to type in the proper listing for your computer; then save it to disk before running it. I'd suggest you devote a fresh disk to this application, including the program itself, plus the inventory files you'll input. In that way, everything will be handy when you want to work on your inventory.

The C-128 version has a number of more sophisticated features than the 64 version. First, it supports the 80-column screen, allowing you to see more information while you type. Second, it uses windows for displaying instructions and inventory status.

Starting a File

When you run Home Inventory, the first screen display lists the status of your file, including the number of rooms and number of items in each room that you've allowed for, plus the number of items the inventory contains so far. Of course, if you're just starting, these numbers are zero. At the bottom of the display, the main menu appears.

Choose option 1, Create File; then, at the prompt, supply a name for it that's no more than 12 characters long. I'd suggest using the date, such as MARCH 1988, as a filename, so it's easy to find your most recent update on the disk. Whatever name you choose, the program will automatically append .INV to it (e.g., MARCH 1988.INV), to identify it as a Home Inventory file. When you want to load the file later, don't type the .INV. If you've amassed more items than one file can hold, just expand your inventory into a second.

The program assumes that you'll group items according to the room where they're most commonly kept. After naming the file, you must specify how many rooms you want and the maximum number of items per room. The number of each that your computer can handle will depend on how verbose you are, but, as a rough guide, figure the C-64 can handle 300 items (say seven rooms of 40 items each) and the 128 twice that many (a 15-room mansion!).

In some cases, you may want to define rooms that aren't actual physical spaces. For instance, you could call your collection of old records a room, since there might not be space to list all the individual disks under "living room."

After you specify the number of rooms and items, the file-status/main-menu display reappears, with the status lines reflecting the existence of your new file.

If you've already created a file and saved it to disk, you can load it for updating by selecting main menu option 2, Get File from Disk. The program then gives you a chance to change the item limits. To keep the same size file, press return at each prompt. If you decide to reduce the file size, be careful, because some data items may be lost.

As you use Home Inventory, keep in mind that the main menu options of creating a new file, loading a file from ►

RUN it right: **C-64; C-128; printer optional**

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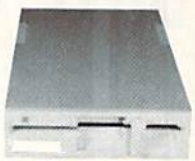

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disk (option 2) and ending the program (option 0) will erase the data you have in memory. For this reason, if you select one of these options, you'll be asked to confirm your intention before the program will execute the option. Assuming you have a copy of the data on disk, press Y and return to tell the program to proceed.

Compiling Your Inventory

After you've finished creating a file or loading one from disk, choose main menu option 3, Work on Data, and the program shows you the list of rooms and the number of items described for each. To select a room to work on, type either its number or defined name. After you select a room, you get a second menu. To add items, choose option 1.

(If you're opening a new room, give it a name, then start entering items at the prompt, thus bypassing the second menu.)

This is where you must be thorough. Scour the real room carefully and enter all items of any value (small items may be grouped as one entry). For each item, enter a complete description, including make and model, size, color, current condition, and so forth. You're allowed up to two screen lines per item—80 characters on the C-64 or 160 characters on the C-128.

The only limitation on your input, since this is Basic, is that you use no commas or colons; I find that semicolons and slashes make quite adequate separators, anyway. You can get around this constraint if you must by starting your input with a quotation mark, but this makes the description more difficult to edit.

Next, enter any unique identifying characteristics, such as serial number, unusual dimensions or scratches, that would help establish the item as yours in court.

The remaining data to be entered includes the approximate age of the item, in years, the price you originally paid for it and its present value. Your insurance company will need this information in handling your claim.

There are two approaches to present value. Traditionally, you'd enter the depreciated value—that is, the amount the item would probably fetch when sold used. An item that's been in use for a few years and is still in fairly good shape might be valued at about half its new cost, for example. If you have a replacement-cost endorsement in your insurance policy, the present value is defined as the cost of a new, comparable item. In your inventory, use whichever method your insurance calls for—just be consistent.

When you're finished with a room, enter Q in place of the item description to return to the main menu. You can always come back later and add more items, until the room is full.

Reviewing Your Data

If you want to make additions or alterations to data you've already entered, type in the room number or name, then choose the option you want from the data revision menu that then appears on the screen. Option 1 is for adding items, while option 2 displays the descriptions of all items currently in the room. The items scroll by fast, so you may want to slow or stop the listing with the keys appropriate to your computer (CTRL on the 64 and the Commodore key on the 128). Press return at the end to get back to the revision menu.

To see more details on a specific item, choose option 3 in the revision menu and enter the item number. To get back to the revision menu, enter 0 for the item number.

If you want to change some information on an item, choose the revision menu's option 4, Modify Data, and enter the item number. After the program lists the present data for that item, type in any changes you want to make; press return for data to be left unchanged. When finished, enter 0 as the item number to get back to the revision menu.

Once you've made all the changes you want to the current room, choose option 5 to move to another room or option 0 to return to the main menu.

Saving to Disk

While building your inventory, be sure to save the file to disk frequently, so you won't lose a lot of work to a computer failure or power glitch. To save an inventory file, choose option 4 from the main menu. When you're asked for the filename, just press return to save the file under its current name. If you want to change the filename, type in the one you want, and the name will be changed accordingly. If you type in a name you've used before on the disk, the program will tell you the file exists and ask if you want to replace it. If so, press Y and return to erase the old file and save the new one in its place. Otherwise, enter N and try again, using a different filename.

Printed Reports

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ious kinds. When you select this option, the program first asks if you want the printout to start with room 1. If so, press return; if not, press the number of the room you want it to start with. Then the program asks if you want the printout to end with the last room in your file. If so, press return; if not, press the number of the last room you want included. After indicating your choices, you'll get the print menu.

There are many combinations of printers and interfaces in Commodoreland, and I've written Home Inventory to support as many of them as possible. If you encounter difficulties, such as double-spacing or funny graphics characters, try changing the secondary address, using option 4 in the print menu (see below). The manual for your printer or interface will suggest what value to use to get upper- and lowercase letters, with line feeds.

Home Inventory can generate various kinds of reports. A Summary Data report gives the number of items in each room, their total cost and present value, and the total data for the specified range of rooms. This type of report is helpful for deciding in advance how much insurance you need.

The Short ID, Age and Cost report is a table of short descriptions and full financial data for all items. In building this table, you may have to trim down some descriptions and IDs, because only 46 and 15 characters, respectively, are allowed for them. Don't worry; brief descriptions are plenty for the aim of this report, which is to help you assess your detailed insurance needs and review your growing estate.

When you select the Full Descriptions and IDs report, financial data on individual items is left out and only the detailed descriptions, identifying characteristics and room summaries are printed. This report is for the police to use in identifying and recovering your possessions.

A Full Report includes the full description and ID for each item, along with its age and financial data. This printout allows two lines for long descriptions and IDs. This is the most complete printout, and is the one you should save for your own records.

When your printer has finished, the program returns to the main menu.

Final Tips

When you've completed your inventory, make a backup, including both the program and your data files, as an archival copy. In addition, order up a printout of the full report, put it in an ►

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Circle 192 on Reader Service card.

envelope, label it and store it in a safe place, away from home. It won't do you any good if it's been burned in the fire or stolen in the robbery. Good locations include a safe deposit box or your lawyer's or insurance agent's office.

You may be tempted to put off preparing a home inventory, because it takes time and a good deal of concentration. However, let me assure you, it's a lot more difficult to do when you don't have the items in front of you. Type in this program and compile your home inventory soon! Ⓡ

Ian Adam is an engineer who has written several programs for RUN, *including Handy Window and Snowflake.*

Listing 1. Home Inventory 64 program.

```
Ø REM HOME INVENTORY 64 - IAN A
  DAM                    :REM*24Ø
1Ø NF$="NONE"            :REM*254
2Ø PRINT"{SHFT CLR}{CRSR DN} *
   HOME INVENTORY BY IAN ADAM"
                         :REM*117
3Ø PRINT"{2 CRSR DNs}"   :REM*3Ø
4Ø PRINT"FILE NAME:",NF$
                         :REM*244
5Ø PRINT"TOTAL ROOMS{3 SPACEs}"
   ,NR                   :REM*2Ø8
6Ø PRINT"ITEMS PER ROOM",NI
                         :REM*2Ø3
7Ø PRINT"ITEMS ENTERED ",CI
                         :REM*2Ø5
8Ø PRINT"{2 CRSR DNs}THE MAIN M
   ENU{CRSR DN}"         :REM*47
9Ø SA=7:K=198:M$(Ø)="END"
                         :REM*68
1ØØ M$(1)="CREATE FILE":REM*234
11Ø M$(2)="GET FILE FROM DISK"
                         :REM*21Ø
12Ø M$(3)="WORK ON DATA"
                         :REM*138
13Ø M$(4)="SAVE TO DISK"
                         :REM*174
14Ø M$(5)="PRINTED REPORT"
                          :REM*27
15Ø FOR I=Ø TO 5         :REM*249
16Ø PRINTI;M$(I):NEXT    :REM*182
17Ø PRINT"{CRSR DN}CHOICE?":WAI
    T K,7:GET A$:A=VAL(A$)
                         :REM*1ØØ
18Ø PRINT:PRINT"{SHFT CLR}"M$(A
    )                    :REM*191
19Ø IF A>2 AND NR=Ø THEN INPUT"
    NO DATA!";A$:RUN     :REM*1Ø3
2ØØ IF A>2 OR NR=Ø THEN 22Ø
                         :REM*198
21Ø PRINT"{CRSR DN}ARE YOU SURE
    ? Y/N":WAIT K,7:GET A$:IF A
    $<"Y" THEN 2Ø        :REM*87
22Ø ON A+1 GOSUB 23Ø,69Ø,25Ø,82
    Ø,41Ø,169Ø:GOTO 2Ø   :REM*2Ø1
23Ø END                  :REM*1Ø3
24Ø :                    :REM*43
25Ø CLR:D$=",S,R"        :REM*191
26Ø GOSUB 56Ø:IF A>19 THEN RUN
                         :REM*136
27Ø INPUT#1,A,B          :REM*225
28Ø PRINT"{CRSR DN}FILE "NF$" A
    LLOWS"A               :REM*2
29Ø PRINT"ROOMS, &"B"ITEMS PER
    ROOM."               :REM*143
3ØØ PRINT"PRESS RETURN IF OK, O
    R ENTER:"            :REM*88
31Ø I=A:J=B:GOSUB 74Ø    :REM*12Ø
32Ø :                    :REM*123
33Ø FOR I=1 TO A         :REM*248
34Ø INPUT#1,NR$(I),IR(I):REM*69
35Ø FOR J=1 TO IR(I)     :REM*241
36Ø INPUT#1,IT$(I,J),ID$(I,J),A
    G(I,J),NV(I,J),PV(I,J)
                         :REM*127
37Ø NEXT:IF J>NI THEN IR(I)=NI
                         :REM*188
38Ø NEXT                 :REM*255
39Ø GOSUB 52Ø:GOSUB 165Ø:GOTO 2
    Ø                     :REM*6
4ØØ :                    :REM*2Ø3
41Ø PRINT"PRESS RETURN FOR: "NF
    $                    :REM*94
42Ø D$=",S,W"            :REM*182
43Ø GOSUB 56Ø:IF A>19 THEN RETU
    RN                   :REM*163
44Ø PRINT#1,NR:PRINT#1,NI:B$="
    "                    :REM*198
45Ø FOR I=1 TO NR        :REM*249
46Ø PRINT#1,B$+NR$(I):PRINT#1,I
    R(I)                 :REM*35
47Ø FOR J=1 TO IR(I)     :REM*74
48Ø PRINT#1,B$+IT$(I,J):PRINT#1
    ,B$+ID$(I,J)         :REM*1Ø5
49Ø PRINT#1,AG(I,J):PRINT#1,NV(
    I,J):PRINT#1,PV(I,J):REM*16
5ØØ NEXT:NEXT            :REM*116
51Ø :                    :REM*58
52Ø CLOSE1:INPUT#2,A,B$:CLOSE2
                         :REM*4Ø
53Ø IF A>19 THEN PRINT"PROBLEM:
     "B$:INPUT"{CTRL 9}RETURN";
    A$                   :REM*114
54Ø RETURN               :REM*168
55Ø :                    :REM*98
56Ø INPUT"FILE NAME";NF$
                         :REM*242
57Ø DF$=LEFT$(NF$,12)+".INV"
                         :REM*79
58Ø D$="Ø:"+DF$+D$       :REM*42
59Ø OPEN2,8,15           :REM*34
6ØØ OPEN1,8,8,D$         :REM*138
61Ø INPUT#2,A,A$         :REM*56
62Ø IF A<2Ø THEN RETURN :REM*25
63Ø PRINTA$:CLOSE1:CLOSE2
                         :REM*146
64Ø IF A-63 THEN INPUT"{CTRL 9}
    RETURN";A$:RETURN    :REM*2Ø8
65Ø PRINT"REPLACE OLD FILE? Y/N
    ":WAIT K,7:GET A$    :REM*223
66Ø IF A$<"Y" THEN RETURN
                         :REM*169
67Ø OPEN2,8,15,"SØ:"+DF$:GOTO 6
    ØØ                    :REM*28
68Ø :                    :REM*224
69Ø CLR:INPUT"{CRSR DN}FILE NAM
    E";NF$               :REM*87
7ØØ PRINT"{CRSR DN}ITEMS ARE GR
    OUPED BY"            :REM*143
71Ø PRINT"THE ROOM THEY ARE KEP
    T IN."               :REM*165
72Ø GOSUB 74Ø:GOTO 2Ø    :REM*81
73Ø :                    :REM*23
74Ø INPUT"{CRSR DN}MAXIMUM # OF
     ROOMS";I            :REM*238
75Ø INPUT"MAXIMUM ITEMS PER ROO
    M";J                 :REM*69
76Ø NR=I:NI=J            :REM*87
77Ø IF A>I THEN I=A      :REM*54
78Ø IF B>J THEN J=B      :REM*8Ø
79Ø DIM IT$(I,J),ID$(I,J),AG(I,
    J),NV(I,J),PV(I,J),NR$(I),I
    R(I)                 :REM*233
8ØØ RETURN               :REM*173
81Ø :                    :REM*1Ø3
82Ø GOSUB 12ØØ           :REM*111
83Ø INPUT"WORK ON WHICH ROOM (Q
     QUIT)";A$           :REM*84
84Ø A=VAL(A$):IF A THEN 88Ø
                         :REM*185
85Ø FOR I=1 TO NR        :REM*139
86Ø IF A$=NR$(I) THEN A=I
                         :REM*159
87Ø NEXT                 :REM*235
88Ø IF A<1 OR A>NR THEN 165Ø
                         :REM*213
89Ø IF IR(A)=Ø THEN GOSUB 1Ø2Ø
                         :REM*143
9ØØ PRINT:PRINT"ROOM"A,NR$(A),"
    ITEMS:"IR(A)         :REM*72
91Ø PRINT" Ø. MAIN MENU"
                         :REM*233
92Ø PRINT" 1. ADD ITEMS"
                         :REM*181
93Ø PRINT" 2. LIST ITEMS"
                         :REM*141
94Ø PRINT" 3. ITEM DETAILS"
                         :REM*234
95Ø PRINT" 4. MODIFY DATA"
                         :REM*169
96Ø PRINT" 5. ANOTHER ROOM"
                         :REM*22Ø
97Ø PRINT"CHOICE?":WAIT K,7:GET
     A$:B=VAL(A$)        :REM*197
98Ø IF B<1 THEN 165Ø     :REM*235
99Ø IF B>4 THEN 82Ø      :REM*78
1ØØØ PRINT:ON B GOSUB 1Ø4Ø,125Ø
    ,11ØØ,114Ø:GOTO 9ØØ
                         :REM*194
1Ø1Ø :                    :REM*4Ø
1Ø2Ø IF NR$(A)="" THEN INPUT"NA
    ME OF ROOM";NR$(A):REM*148
1Ø3Ø :                    :REM*68
1Ø4Ø B=IR(A)+1:GOSUB 156Ø
                          :REM*7Ø
1Ø5Ø IF B>NI THEN INPUT"ROOM IS
     FULL: {CTRL 9}RETURN";A$:
    RETURN               :REM*179
```

HOME INVENTORY

```
1060 GOSUB 1400          :REM*88
1070 IF A$="Q" THEN RETURN
                         :REM*53
1080 IR(A)=B:B=B+1:GOTO 1050
                         :REM*184
1090 :                   :REM*120
1100 INPUT"DETAIL ITEM # (0 QUI
     T)";B               :REM*241
1110 IF B<1 OR B>IR(A) THEN RET
     URN                 :REM*232
1120 GOSUB 1310:GOTO 1100
                         :REM*251
1130 :                   :REM*160
1140 PRINT"{CRSR DN}PRESS RETUR
     N AT ANY PROMPT TO"
                         :REM*191
1150 PRINT"KEEP THE SAME DATA."
     :PRINT              :REM*239
1160 INPUT"MODIFY WHICH ITEM #
     (0 QUIT)";B         :REM*122
1170 IF B<1 OR B>IR(A) THEN RET
     URN                 :REM*47
1180 GOSUB 1400:GOTO 1140
                         :REM*95
1190 :                   :REM*228
1200 PRINT:PRINT"ROOMS",,,"ITEM
     S"                  :REM*143
1210 FOR I=1 TO NR       :REM*226
1220 PRINTI,NR$(I)TAB(32)IR(I)
                         :REM*223
1230 NEXT:RETURN         :REM*105
1240 :                   :REM*23
1250 PRINT"{SHFT CLR}"   :REM*8
1260 FOR I=1 TO IR(A)    :REM*49
1270 PRINTI;IT$(A,I)     :REM*168
1280 NEXT:IF IR(A)>16 THEN INPU
     T"{CTRL 9}RETURN";A$
                         :REM*137
1290 RETURN              :REM*157
1300 :                   :REM*75
1310 PRINT"{CRSR DN}ROOM:",NR$(
     A)                  :REM*102
1320 PRINT"ITEM #:",B    :REM*188
1330 PRINT"DESCRIP:",IT$(A,B)
                         :REM*152
1340 PRINT"IDENT:",ID$(A,B)
                         :REM*75
1350 PRINT"AGE, YRS:",AG(A,B)
                         :REM*3
1360 PRINT"COST:",NV(A,B)
                         :REM*152
1370 PRINT"VALUE:",PV(A,B)
                         :REM*231
1380 PRINT:RETURN        :REM*19
1390 :                   :REM*173
1400 PRINT"{SHFT CLR}ROOM:",NR$
     (A)                 :REM*0
1410 PRINT"ITEM #"B"DESCRIPTION
      (Q: TO QUIT):"     :REM*150
1420 PRINTTAB(2)IT$(A,B):REM*30
1430 PRINT"{HOME}{CRSR DN}":INP
     UTA$                :REM*234
1440 IF A$="Q" THEN RETURN
                         :REM*130
1450 IT$(A,B)=A$         :REM*117
1460 PRINT"{HOME}{7 CRSR DNs}ID
     :{2 SPACEs}"ID$(A,B)
                         :REM*91
1470 PRINT"{HOME}{7 CRSR DNs}{3
      CRSR RTs}";:INPUTID$(A,B)
                         :REM*179
1480 PRINT"AGE, YRS:",AG(A,B)
                         :REM*141
1490 PRINT"{CRSR UP}"TAB(9);:IN
     PUTAG(A,B)          :REM*232
1500 PRINT"ORIGINAL COST: "NV(A
     ,B)                 :REM*8
1510 PRINT"{CRSR UP}"TAB(14);:I
     NPUTNV(A,B)         :REM*44
1520 PRINT"PRESENT VALUE: "PV(A
     ,B)                 :REM*162
1530 PRINT"{CRSR UP}"TAB(14);:I
     NPUTPV(A,B)         :REM*120
1540 RETURN              :REM*148
1550 :                   :REM*78
1560 PRINT"{SHFT CLR}FOR EACH I
     TEM, GIVE A DESCRIPTION"
                         :REM*25
1570 PRINT"INCLUDING MAKE, SIZE
     , CONDITION, ETC." :REM*99
1580 PRINT"GIVE AN IDENTIFICATI
     ON SUCH AS SERIAL # OR OTH
     ER MARKS."          :REM*133
1590 PRINT"COMMAS & COLONS NOT
     ALLOWED AS INPUT." :REM*73
1600 PRINT"{CRSR DN}AGE IS IN Y
     EARS."              :REM*95
1610 PRINT"COST IS ORIGINAL PRI
     CE OF ITEM,"        :REM*187
1620 PRINT"& ESTIMATE THE CURRE
     NT VALUE."          :REM*16
1630 PRINT"{CRSR DN}PRESS SPACE
      BAR":WAIT K,7:GET A$
                         :REM*50
1640 :                   :REM*164
1650 CI=0:FOR I=1 TO NR  :REM*2
1660 CI=CI+IR(I):NEXT    :REM*225
1670 RETURN              :REM*19
1680 :                   :REM*204
1690 PRINT"{CRSR DN}ENSURE PRIN
     TER IS READY"       :REM*125
1700 GOSUB 1200          :REM*208
1710 INPUT"{CRSR DN}START REPOR
     T AT ROOM{2 SPACEs}1{3 CRS
     R LFs}";S           :REM*98
1720 PRINT"END REPORT AT ROOM "
     NR                  :REM*255
1730 PRINT"{CRSR UP}"TAB(18);:I
     NPUTE:PRINT         :REM*176
1740 IF S<1 OR S>E OR E>NR THEN
      RETURN             :REM*190
1750 :                   :REM*23
1760 PRINT"{SHFT CLR}DESCRIPTIO
     N & ID MAY BE CUT TO FIT."
                         :REM*83
1770 PRINT"YOUR OPTIONS:":PRINT
                         :REM*182
1780 PRINT"0. SUMMARIZE DATA"
                         :REM*255
1790 PRINT"1. SHORT ID, AGE & C
     OST TABLE"          :REM*250
1800 PRINT"2. FULL DESCRIPTIONS
      & ID'S ONLY"       :REM*92
1810 PRINT"3. FULL REPORT"
                         :REM*184
1820 PRINT"4. SET SECONDARY ADD
     RESS"               :REM*220
1830 PRINT"5. CANCEL"    :REM*181
1840 PRINT"YOUR CHOICE?":WAIT K
     ,7:GET A$:M=VAL(A$)
                         :REM*185
1850 IF M<4 THEN 1900    :REM*100
1860 IF M>4 THEN RETURN:REM*242
1870 PRINT"SECONDARY ADDRESS IS
     "SA"FOR UPPER/LOWER"
                         :REM*127
1880 PRINT"CASE, & LINE FEEDS:"
     :INPUT"NEW VALUE";SA:GOTO
     1760                :REM*78
1890 :                   :REM*155
1900 OPEN4,4,SA:CMD 4:PRINT:PRI
     NT                  :REM*159
1910 PRINTCHR$(14)"HOME INVENTO
     RY"                 :REM*101
1920 PRINT"FILE: "NF$    :REM*235
1930 T1=0:T2=0:T3=0:B$="{15 SPA
     CEs}"               :REM*140
1940 FOR A=S TO E:I=0:J=0
                         :REM*69
1950 PRINT:PRINTCHR$(14)"ROOM"A
     ;NR$(A):PRINTCHR$(15)
                         :REM*70
1960 IF IR(A)=0 THEN 2020
                         :REM*190
1970 IF MAND1 THEN PRINT"{2 SPA
     CEs}# DESCRIPTION"SPC(35)"
     ID"SPC(13)"AGE{2 SPACEs}CO
     ST VALUE"           :REM*69
1980 FOR B=1 TO IR(A)    :REM*241
1990 I=I+NV(A,B):J=J+PV(A,B):ON
      M GOSUB 2180,2220,2160
                         :REM*168
2000 NEXT                :REM*90
2010 :                   :REM*28
2020 PRINT"TOTAL, ROOM"A
                         :REM*190
2030 B=IR(A):GOSUB 2110:REM*170
2040 T1=T1+B:T2=T2+I:T3=T3+J
                         :REM*80
2050 NEXT:PRINT          :REM*201
2060 :                   :REM*78
2070 IF S=E THEN 2100    :REM*114
2080 PRINTCHR$(14)"TOTAL FOR RO
     OMS"S"TO"E:PRINTCHR$(15)
                         :REM*187
2090 B=T1:I=T2:J=T3:GOSUB 2110
                         :REM*155
2100 PRINT#4:CLOSE4:RETURN
                         :REM*182
2110 PRINTB$"ITEMS:"SPC(8)B
                         :REM*73
2120 PRINTB$"ORIGINAL COST:"I
                         :REM*194
2130 PRINTB$"PRESENT VALUE:"J
                         :REM*169
2140 RETURN              :REM*226
2150 :                   :REM*168
2160 IF LEN(IT$(A,B))>46 THEN P
     RINTIT$(A,B)        :REM*51
2170 IF LEN(ID$(A,B))>15 THEN P
     RINTID$(A,B)        :REM*194
2180 PRINTRIGHT$(B$+STR$(B)+" "
     ,4)LEFT$(IT$(A,B)+B$+B$+B$
     ,46);               :REM*92
2190 PRINTLEFT$(ID$(A,B)+B$,15)
     RIGHT$(B$+STR$(AG(A,B)),3)
     ;                   :REM*204
```

```
22ØØ PRINTRIGHT$(B$+STR$(NV(A,B
     )),6)RIGHT$(B$+STR$(PV(A,B
     )),6)                    :REM*3Ø
221Ø RETURN                   :REM*57
222Ø PRINTIT$(A,B):PRINTID$(A,B
     ):PRINT:RETURN           :REM*188
```

Listing 2. Home Inventory 128 program.

```
Ø REM HOME INVENTORY 128 - IAN
  ADAM                        :REM*95
1Ø NF$="NONE":PRINT"8Ø COLUMNS"
                              :REM*119
2Ø GRAPHIC 5:COLOR 6,1:PRINT"{2
    HOMEs}{SHFT CLR}{COMD 7}"
                              :REM*11
3Ø FOR I=Ø TO 79:CHAR,I,4,"{SHF
   T C}":NEXT                 :REM*216
4Ø FOR I=Ø TO 3:CHAR,44,I,"{SHF
   T B}":NEXT:CHAR,44,4,"{COMD
   E}"                        :REM*21Ø
5Ø PRINTCHR$(142):M$(Ø)="END":S
   A=7                        :REM*34
6Ø M$(1)="CREATE FILE"        :REM*13Ø
7Ø M$(2)="GET FILE FROM DISK"
                              :REM*58
8Ø M$(3)="WORK ON DATA":REM*162
9Ø M$(4)="SAVE TO DISK"       :REM*7Ø
1ØØ M$(5)="PRINTED REPORT"
                              :REM*115
11Ø DO:WINDOW Ø,Ø,35,3,1:COLOR
    5,15                      :REM*23
12Ø PRINTCHR$(142)TAB(9)"* HOME
     INVENTORY *"             :REM*88
13Ø PRINTTAB(12)"BY IAN ADAM"
                              :REM*58
14Ø GOSUB 23Ø:WINDOW Ø,5,79,24,
    1                         :REM*55
15Ø PRINT"{CRSR DN} THE MAIN ME
    NU{CRSR DN}"              :REM*169
16Ø FOR I=Ø TO 5:PRINTI;M$(I):N
    EXT                       :REM*2Ø3
17Ø PRINT"{CRSR DN}YOUR CHOICE?
    ":GETKEY A$:A=VAL(A$)
                              :REM*64
18Ø FAST:PRINT"{SHFT CLR}"M$(A)
                              :REM*31
19Ø IF A>2 AND NR=Ø THEN INPUT"
    NO DATA!";A$:RUN          :REM*1Ø3
2ØØ IF A>2 OR NR=Ø THEN 22Ø
                              :REM*198
21Ø PRINT"{CRSR DN}ARE YOU SURE
    ? Y/N":GETKEY A$:LOOP UNTIL
     A$="Y"                   :REM*229
22Ø ON A+1 GOSUB 29Ø,66Ø,31Ø,78
    Ø,45Ø,158Ø:LOOP           :REM*222
23Ø WINDOW 46,Ø,79,3,1:COLOR 5,
    14                        :REM*27
24Ø PRINT"FILE NAME:{2 SPACEs}"
    NF$                       :REM*181
25Ø PRINT"TOTAL ROOMS{3 SPACEs}
    ",NR                      :REM*155
26Ø PRINT"ITEMS PER ROOM",NI
                              :REM*242
27Ø PRINT"ITEMS ENTERED ",CI;
                              :REM*164
28Ø RETURN                    :REM*167
29Ø PRINT"{2 HOMEs}{SHFT CLR}":
    END                       :REM*2Ø6
3ØØ :                         :REM*1Ø3
31Ø CLR:GOSUB 58Ø:IF B>19 THEN
    RUN                       :REM*219
32Ø INPUT#1,A,B               :REM*16
33Ø PRINT"{CRSR DN}FILE "NF$" A
    LLOWS"A"ROOMS, &"B"ITEMS PE
    R ROOM."                  :REM*2Ø7
34Ø PRINT"PRESS RETURN IF OK, O
    R ENTER:"                 :REM*129
35Ø I=A:J=B:GOSUB 7ØØ         :REM*68
36Ø :                         :REM*163
37Ø FOR I=1 TO A              :REM*19
38Ø INPUT#1,NR$(I),IR(I)
                              :REM*157
39Ø FOR J=1 TO IR(I)          :REM*26
4ØØ INPUT#1,IT$(I,J),ID$(I,J),A
    G(I,J),NV(I,J),PV(I,J)
                              :REM*39
41Ø NEXT:IF J>NI THEN IR(I)=NI
                              :REM*132
42Ø NEXT                      :REM*36
43Ø GOSUB 55Ø:GOSUB 96Ø:GOTO 5Ø
                              :REM*1Ø8
44Ø :                         :REM*243
45Ø PRINT"PRESS RETURN FOR: "NF
    $                         :REM*118
46Ø GOSUB 58Ø:IF B>19 THEN RETU
    RN                        :REM*14Ø
47Ø PRINT#1,NR:PRINT#1,NI:B$="
    "                         :REM*39
48Ø FOR I=1 TO NR             :REM*3Ø
49Ø PRINT#1,B$+NR$(I):PRINT#1,I
    R(I)                      :REM*1
5ØØ FOR J=1 TO IR(I)          :REM*1ØØ
51Ø PRINT#1,B$+IT$(I,J):PRINT#1
    ,B$+ID$(I,J)              :REM*71
52Ø PRINT#1,AG(I,J):PRINT#1,NV(
    I,J):PRINT#1,PV(I,J):REM*5Ø
53Ø NEXT:NEXT                 :REM*138
54Ø :                         :REM*84
55Ø IF DS>19 THEN PRINT"PROBLEM
    : "DS$:GETKEY A$          :REM*34
56Ø DCLOSE:RETURN             :REM*52
57Ø :                         :REM*118
58Ø INPUT"FILE NAME";NF$
                              :REM*198
59Ø D$=LEFT$(NF$,12)+".INV"
                              :REM*138
6ØØ DO:IF A THEN DOPEN#1,(D$),W
    :ELSE DOPEN#1,(D$)        :REM*23Ø
61Ø B=DS:IF B<2Ø THEN RETURN
                              :REM*66
62Ø PRINT"PROBLEM: "DS$:DCLOSE:
    IF B-63 THEN GETKEY A$:RETU
    RN                        :REM*21Ø
63Ø PRINT"REPLACE OLD FILE? Y/N
    ":GETKEY A$:IF A$<"Y" THEN
    RETURN                    :REM*213
64Ø SCRATCH(D$):LOOP          :REM*182
65Ø :                         :REM*198
66Ø CLR:INPUT"FILE NAME";NF$
                              :REM*82
67Ø PRINT"{CRSR DN}ITEMS ARE GR
    OUPED BY THE ROOM THEY ARE
    KEPT IN."                 :REM*158
68Ø GOSUB 7ØØ:GOTO 5Ø         :REM*5Ø
69Ø :                         :REM*238
7ØØ INPUT"{CRSR DN}MAXIMUM # OF
     ROOMS";I                 :REM*54
71Ø INPUT"MAXIMUM ITEMS PER ROO
    M";J                      :REM*156
72Ø NR=I:NI=J                 :REM*15
73Ø IF A>I THEN I=A           :REM*239
74Ø IF B>J THEN J=B           :REM*8
75Ø DIM IT$(I,J),ID$(I,J),AG(I,
    J),NV(I,J),PV(I,J),NR$(I),I
    R(I)                      :REM*2Ø9
76Ø RETURN                    :REM*133
77Ø :                         :REM*63
78Ø DO:GOSUB 12ØØ             :REM*74
79Ø INPUT"WORK ON WHICH ROOM (Q
     QUIT)";A$                :REM*6Ø
8ØØ A=VAL(A$)                 :REM*25Ø
81Ø IF A=Ø THEN DO UNTIL A$=NR$
    (A):A=A+1:LOOP UNTIL A>NR
                              :REM*2Ø4
82Ø IF A<1 OR A>NR THEN EXIT
                              :REM*212
83Ø GOSUB 99Ø                 :REM*173
84Ø WINDOW Ø,5,79,24,1:COLOR 5,
    4                         :REM*217
85Ø IF IR(A)=Ø THEN GOSUB 1Ø2Ø:
    GOTO 84Ø                  :REM*8Ø
86Ø PRINT" Ø. MAIN MENU"
                              :REM*191
87Ø PRINT" 1. ADD ITEMS"
                              :REM*123
88Ø PRINT" 2. LIST ITEMS"
                              :REM*95
89Ø PRINT" 3. ITEM DETAILS"
                              :REM*148
9ØØ PRINT" 4. MODIFY DATA"
                              :REM*127
91Ø PRINT" 5. ANOTHER ROOM"
                              :REM*13Ø
92Ø PRINT"CHOICE?":GETKEY A$:B=
    VAL(A$)                   :REM*19Ø
93Ø IF B<1 THEN EXIT          :REM*79
94Ø SCNCLR:IF B<5 THEN ON B GOS
    UB 1Ø4Ø,125Ø,111Ø,115Ø:GOTO
     84Ø                      :REM*96
95Ø LOOP                      :REM*166
96Ø CI=Ø:FOR I=1 TO NR        :REM*87
97Ø CI=CI+IR(I):NEXT          :REM*49
98Ø RETURN                    :REM*1Ø2
99Ø WINDOW Ø,3,43,3,1:COLOR 5,1
    1                         :REM*24
1ØØØ PRINT"ROOM"A;NR$(A)" ITEMS
     :"IR(A);:RETURN          :REM*24
1Ø1Ø :                        :REM*4Ø
1Ø2Ø IF NR$(A)="" THEN INPUT"NA
    ME OF ROOM";NR$(A):REM*148
1Ø3Ø :                        :REM*68
1Ø4Ø B=IR(A)+1:GOSUB 151Ø
                              :REM*56
1Ø5Ø DO:GOSUB 99Ø:WINDOW Ø,1Ø,7
    9,24,1:IF B>NI THEN EXIT
                              :REM*76
1Ø6Ø GOSUB 137Ø:IF A$="Q" THEN
    RETURN                    :REM*126
1Ø7Ø IR(A)=B:B=B+1:CI=CI+1
                              :REM*24Ø
1Ø8Ø GOSUB 23Ø:LOOP           :REM*33
1Ø9Ø INPUT"ROOM IS FULL";A$:RET
    URN                       :REM*228 ►
```

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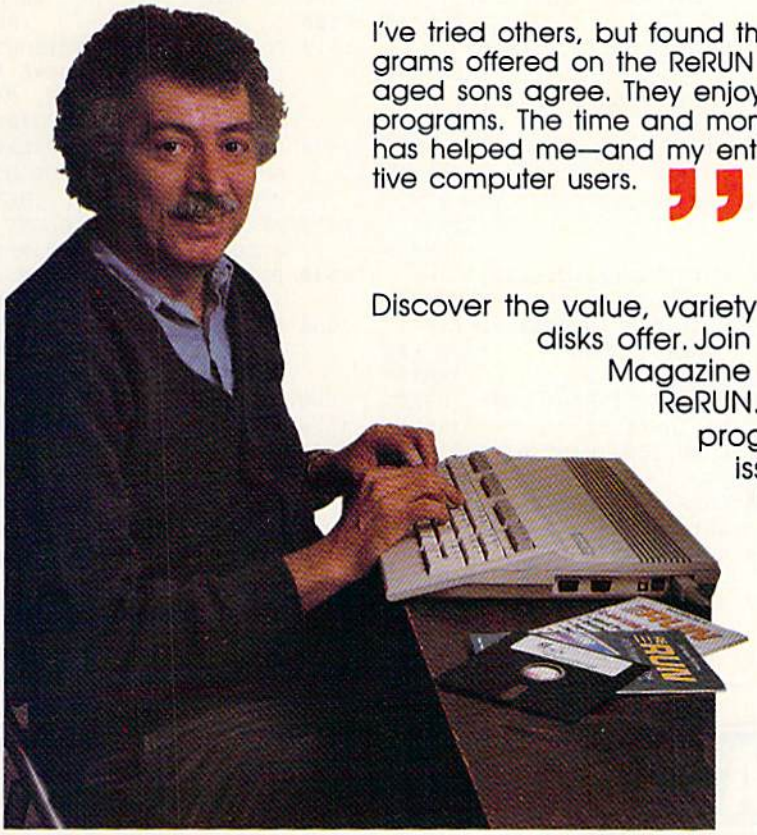

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RERUN

```
11ØØ :                          :REM*13Ø
111Ø DO:INPUT"DETAIL ITEM # (Ø
     QUIT)";B                   :REM*91
112Ø IF B<1 OR B>IR(A) THEN RET
     URN                        :REM*226
113Ø GOSUB 129Ø:LOOP            :REM*156
114Ø :                          :REM*17Ø
115Ø PRINT"PRESS RETURN AT ANY
     PROMPT TO KEEP THE SAME DA
     TA.":WINDOW Ø,6,79,24
                                :REM*1Ø6
116Ø DO:INPUT"{CRSR DN}MODIFY W
     HICH ITEM # (Ø QUIT)";B
                                :REM*14
117Ø IF B<1 OR B>IR(A) THEN RET
     URN                        :REM*47
118Ø SCNCLR:GOSUB 137Ø:LOOP
                                :REM*14
119Ø :                          :REM*228
12ØØ PRINT"ROOMS ACTIVE:",,"ITE
     MS"                        :REM*94
121Ø FOR I=1 TO NR              :REM*226
122Ø PRINTI,NR$(I)TAB(32)IR(I)
                                :REM*223
123Ø NEXT:RETURN                :REM*1Ø5
124Ø :                          :REM*23
125Ø FOR I=1 TO IR(A)           :REM*15
126Ø PRINTI;IT$(A,I)            :REM*162
127Ø NEXT:INPUT"{CTRL 9}RETURN"
     ;A$:RETURN                 :REM*137
128Ø :                          :REM*63
129Ø PRINT"{CRSR DN}ITEM #:",B
                                :REM*237
13ØØ PRINT"DESCRIP:",IT$(A,B)
                                :REM*186
131Ø PRINT"IDENT:",ID$(A,B)
                                :REM*1Ø5
132Ø PRINT"AGE, YRS:",AG(A,B)
                                :REM*45
133Ø PRINT"COST:",NV(A,B)
                                :REM*186
134Ø PRINT"VALUE:",PV(A,B)
                                :REM*153
135Ø PRINT:RETURN               :REM*25Ø
136Ø :                          :REM*143
137Ø COLOR 5,4:PRINT"ITEM #"B,"
     DESCRIPTION (Q: QUIT):"
                                :REM*49
138Ø PRINTTAB(2)IT$(A,B)
                                :REM*247
139Ø CHAR,Ø,1:INPUTA$:IF A$="Q"
      THEN RETURN               :REM*2Ø8
14ØØ IT$(A,B)=A$                :REM*39
141Ø CHAR,Ø,5:PRINT"ID:{2 SPACE
     s}"ID$(A,B)                :REM*4
142Ø CHAR,3,5:INPUTID$(A,B)
                                :REM*13
143Ø CHAR,Ø,9:PRINT"AGE, YRS:",
     AG(A,B)                    :REM*146
144Ø CHAR,9,9:INPUTAG(A,B)
                                :REM*199
145Ø PRINT"ORIGINAL COST: "NV(A
     ,B)                        :REM*122
146Ø CHAR,14,1Ø:INPUTNV(A,B)
                                :REM*249
147Ø PRINT"PRESENT VALUE: "PV(A
     ,B)                        :REM*236
148Ø CHAR,14,11:INPUTPV(A,B)
                                :REM*41
149Ø RETURN                     :REM*1Ø2
15ØØ :                          :REM*16
151Ø COLOR 5,15:PRINT"{SHFT CLR
     }FOR EACH ITEM, GIVE A DES
     CRIPTION WITH MAKE, SIZE,
     CONDITION, ETC."           :REM*38
152Ø PRINT"GIVE IDENTIFICATION
     SUCH AS SERIAL # OR OTHER
     MARKS."                    :REM*224
153Ø PRINT"COMMAS & COLONS NOT
     ALLOWED AS INPUT.":REM*141
154Ø PRINT"AGE IS IN YEARS."
                                :REM*247
155Ø PRINT"COST IS ORIGINAL PRI
     CE OF ITEM, & ESTIMATE CUR
     RENT VALUE."               :REM*1Ø5
156Ø RETURN                     :REM*16Ø
157Ø :                          :REM*9Ø
158Ø PRINT"ENSURE PRINTER IS RE
     ADY{CRSR DN}"              :REM*173
159Ø GOSUB 12ØØ                 :REM*98
16ØØ INPUT"{CRSR DN}START REPOR
     T AT ROOM{2 SPACEs}1{3 CRS
     R LFs}";S                  :REM*24Ø
161Ø PRINT"END REPORT AT ROOM "
     NR                         :REM*1Ø5
162Ø PRINT"{CRSR UP}"TAB(18);:I
```


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Circle 61 on Reader Service card.

HOME INVENTORY

```
    NPUTE:PRINT          :REM*2
163Ø IF S<1 OR S>E OR E>NR THEN
     RETURN              :REM*2Ø8
164Ø :                   :REM*164
165Ø SCNCLR:PRINT"DESCRIPTION &
     IDENT'N MAY BE SHORTENED
    TO FIT THE PAGE." :REM*236
166Ø PRINT"HERE ARE THE REPORT
    OPTIONS:":PRINT   :REM*148
167Ø PRINT"Ø. PRINT JUST SUMMAR
    Y DATA"           :REM*135
168Ø PRINT"1. SHORT ID, AGE, &
    COST TABLE"       :REM*21
169Ø PRINT"2. FULL DESCRIPTIONS
     & ID'S ONLY"     :REM*42
17ØØ PRINT"3. FULL REPORT"
                      :REM*6
171Ø PRINT"4. SET SECONDARY ADD
    RESS"             :REM*34
172Ø PRINT"5. CANCEL"  :REM*39
173Ø PRINT"YOUR CHOICE?":GETKEY
     A$:M=VAL(A$)     :REM*21Ø
174Ø IF M=4 THEN PRINT"SECONDAR
    Y ADDRESS IS"SA"FOR UPPER
    AND LOWER CASE, WITH LINE
    FEED.":INPUT"NEW SECONDARY
     ADDRESS";SA:GOTO 165Ø
                      :REM*38
175Ø IF M>4 THEN RETURN:REM*1ØØ
176Ø :                :REM*29
177Ø OPEN4,4,SA:CMD4:PRINT
                      :REM*193
178Ø PRINTCHR$(14)"HOME INVENTO
    RY"               :REM*234
179Ø PRINT"FILE: "NF$  :REM*1Ø5
18ØØ T1=Ø:T2=Ø:T3=Ø:R$="###":S$
    =R$+R$:T$=S$+S$+R$:U$=T$+T
    $+T$+"#"          :REM*189
181Ø FOR A=S TO E:I=Ø:J=Ø
                      :REM*196
182Ø PRINT:PRINTCHR$(14)"ROOM"A
    ;NR$(A):PRINTCHR$(15)
                      :REM*2Ø1
183Ø IF IR(A) THEN BEGIN
                      :REM*116
184Ø IF MAND1 THEN PRINT"{2 SPA
    CEs}# DESCRIPTION"SPC(35)"
    ID"SPC(13)"AGE{2 SPACEs}CO
    ST VALUE"         :REM*194
185Ø FOR B=1 TO IR(A)  :REM*115
186Ø I=I+NV(A,B):J=J+PV(A,B):ON
     M GOSUB 2Ø5Ø,2Ø7Ø,2Ø3Ø
                      :REM*196
187Ø NEXT:BEND        :REM*169
188Ø :                :REM*149
189Ø PRINT"TOTAL FOR ROOM";:PRI
    NT USING R$;A;    :REM*232
19ØØ IF MAND1 THEN PRINTSPC(51)
    ;:PRINT USING S$;I,J:ELSE
    PRINT:B=IR(A):GOSUB 198Ø
                      :REM*39
191Ø T1=T1+B:T2=T2+I:T3=T3+J
                      :REM*211
192Ø NEXT:PRINT       :REM*75
193Ø :                :REM*195
194Ø IF E-S THEN BEGIN :REM*192
195Ø PRINTCHR$(14)"TOTAL FOR RO
    OMS"S"TO"E:PRINTCHR$(15)
                      :REM*52
196Ø B=T1:I=T2:J=T3:GOSUB 198Ø:
    BEND              :REM*8Ø
197Ø PRINT#4:CLOSE4:RETURN
                      :REM*48
198Ø PRINT"ITEMS:"SPC(9)B
                      :REM*7Ø
199Ø PRINT"ORIGINAL COST: "I
                      :REM*28
2ØØØ PRINT"PRESENT VALUE: "J
                      :REM*147
2Ø1Ø RETURN           :REM*96
2Ø2Ø :                :REM*22
2Ø3Ø IF LEN(IT$(A,B))>46 THEN P
    RINTIT$(A,B)      :REM*174
2Ø4Ø IF LEN(ID$(A,B))>15 THEN P
    RINTID$(A,B)      :REM*64
2Ø5Ø PRINT USING R$;B;:PRINT" "
    ;:PRINT USING U$;IT$(A,B);
    :PRINT USING T$;ID$(A,B);:
    PRINT USING R$;AG(A,B);:PR
    INT USING S$;NV(A,B),PV(A,
    B)                :REM*189
2Ø6Ø RETURN           :REM*146
2Ø7Ø PRINTIT$(A,B):PRINTID$(A,B
    ):PRINT:RETURN    :REM*2
```

■

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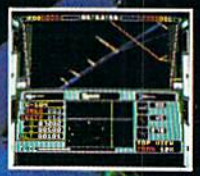

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Circle 7 on Reader Service card.

Affairs of State

From the Pine Tree state to the Golden gate, this program should appeal to anyone who wants to learn about the 50 states.

By MARY E. WILSON

Everyone surely knows that Sacramento is the capital of California. But how many can answer which state claims the black-eyed Susan as its state flower?

This educational program will test your knowledge of not only the state capitals, but also the state flowers, state birds and even the nicknames of all 50 states. You can use it as a tool to help little Bethany pass her seventh-grade social studies quizzes, to test Uncle Bill's trivia knowledge, or simply for your own edification.

To use the program, which is written entirely in Basic, simply type in Listing 1 and save it to disk. When you are ready to play, type in "AFFAIRS OF STATE",8. Then press the return key and type in RUN at the prompt.

A menu will soon appear on the screen offering a choice of quiz categories. Option 1 asks you to name the capitals; option 2 presents the capitals, and you must correctly name the states. Options 3, 4 and 5 give the state, and you must type in the flower, bird or nickname for that state.

The program automatically keeps track of your score (you get two points for each correct answer). A high-pitched sound accompanies a correct answer. After each wrong entry—announced by a low-pitched sound—the program provides the correct answer.

Listing 2 will print out an answer sheet with the information in columnar form and in condensed print, so that it will fit on one page. It will work on the 1525 and compatible printers.

The easy way to type in Listing 2 is to first save Affairs of State to disk. Load it and delete lines 10 through 1200, leaving the Data statements. Then type in Listing 2, which is quite short, including line 1210. Save the program under a new name, such as Answer Sheet or whatever you wish. This saves typing all the Data statements again.

(See the March-April edition of RUN for a version of this program with a graphic depiction of each state.) ■

Mary E. Wilson is probably the only Commodore programmer who has great grandchildren. Now retired, she was a data entry operator for the State of Florida Health and Rehabilitative Services.

Listing 1. Affairs of State program.

```
10 REM AFFAIRS OF STATE BY MARY
    E. WILSON           :REM*144
100 D$="{15 CRSR DNs}":DD$="{4
    CRSR DNs}":R=(-TI):S=54272
                        :REM*53
110 E$="{SHFT LB.}":F$="{COMD *
    }":G$="{CTRL 9}{SHFT LB.}":
    H$="{CTRL 9}{COMD *}":I$="{
    CTRL 9} {CTRL 0}":S$="{CTRL
     9}*{CTRL 0}"       :REM*32
120 GOSUB920            :REM*207
130 :                   :REM*188
140 REM *READ DATA AND PLACE IN
     ARRAYS*            :REM*221
150 :                   :REM*208
160 DIMJ$(50,5)         :REM*53
170 FORT=1TO50:READJ$(T,1),J$(T
    ,2),J$(T,3),J$(T,4),J$(T,5)
    :NEXT               :REM*19
180 GOSUB360            :REM*10
190 GETMM$:IFMM$=""THEN190
                        :REM*52
200 POKE5328,11        :REM*222
210 GR=VAL(MM$)         :REM*39
220 GOSUB620            :REM*40
230 :                   :REM*33
240 REM *PLAY AGAIN OR END*
                        :REM*33
250 :                   :REM*53
260 PRINT"{SHFT CLR}{3 CRSR DNs
    }"TAB(7)"{CTRL 8}YOUR TOTAL
     SCORE IS ";SC;"%" :REM*180 ►
```

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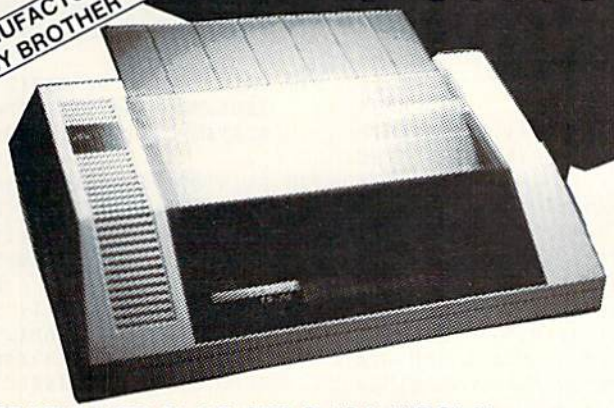

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Circle 223 on Reader Service card.

AFFAIRS OF STATE

```
27Ø IFSC>95THENPRINTDD$TAB(9) "
    {CTRL 5}THAT'S VERY GOOD!"
                          :REM*164
28Ø PRINTD$TAB(1Ø){2 SPACEs}"{C
    TRL 4}PLAY AGAIN? (Y/N)"
                          :REM*162
29Ø GETA$:IFA$=""THEN29Ø
                          :REM*237
3ØØ IFA$="Y"THENRESTORE:GOTO17Ø
                          :REM*62
31Ø PRINT"{SHFT CLR}"D$TAB(12)"
    {CTRL 8}HAVE A NICE DAY!"
                          :REM*17
32Ø END                   :REM*193
33Ø :                     :REM*133
34Ø REM *MENU*            :REM*212
35Ø :                     :REM*153
36Ø PRINT"{SHFT CLR}":POKE5328Ø
    ,5:POKE53281,Ø        :REM*2ØØ
37Ø BT$="{CTRL 9}{CTRL 4}{SHFT
    U}{26 SHFT *s}{SHFT I}{CTRL
    Ø}"                   :REM*61
38Ø BS$="{CTRL 9}{CTRL 4}{SHFT
    -}{CTRL Ø}"           :REM*125
39Ø BM$="{CTRL 9}{CTRL 4}{SHFT
    J}{26 SHFT *s}{SHFT K}{CTRL
    Ø}"                   :REM*33
4ØØ PRINT"{SHFT CLR}{CRSR DN}";
    TAB(12)"{CTRL 3}AFFAIRS OF
    STATE{CTRL 4}":PRINT:REM*51
41Ø PRINT"{CRSR DN}";:PRINTTAB(
    6)BT$                 :REM*13
42Ø PRINTTAB(6)BS$;SPC(26);BS$
                          :REM*189
43Ø PRINTTAB(6)BS$;SPC(11)"{CTR
    L 4}MENU"SPC(11);BS$
                          :REM*197
44Ø PRINTTAB(6)BS$;SPC(26);BS$
                          :REM*137
45Ø PRINTTAB(6)BS$;SPC(2);"{CTR
    L 4}1. STATES/CAPITALS";SPC
    (6);BS$               :REM*65
46Ø PRINTTAB(6)BS$;SPC(26);BS$
                          :REM*229
47Ø PRINTTAB(6)BS$;SPC(2);"{CTR
    L 4}2. CAPITALS/STATES";SPC
    (6);BS$               :REM*132
48Ø PRINTTAB(6)BS$;SPC(26);BS$
                          :REM*241
49Ø PRINTTAB(6)BS$;SPC(2);"{CTR
    L 4}3. STATE FLOWERS";SPC(8
    );BS$                 :REM*213
5ØØ PRINTTAB(6)BS$;SPC(26);BS$
                          :REM*2Ø5
51Ø PRINTTAB(6)BS$;SPC(2);"{CTR
    L 4}4. STATE BIRDS";SPC(1Ø)
    ;BS$                  :REM*2Ø5
52Ø PRINTTAB(6)BS$;SPC(26);BS$
                          :REM*217
53Ø PRINTTAB(6)BS$;SPC(2);"{CTR
    L 4}5. STATE NICKNAMES";SPC
    (6);BS$               :REM*41
54Ø PRINTTAB(6)BS$;SPC(26);BS$
                          :REM*52
55Ø PRINTTAB(6);BM$:PRINT:PRINT
                          :REM*251
56Ø PRINTTAB(7)"{CTRL 3}PRESS N
    UMBER OF YOUR CHOICE"
                          :REM*19
57Ø RETURN                :REM*2Ø2
58Ø END                   :REM*198
59Ø :                     :REM*138
6ØØ REM *MAIN LOOP*       :REM*188
61Ø :                     :REM*158
62Ø QN=1:SC=Ø:GR=VAL(MM$)
                          :REM*1Ø8
63Ø FORA=1TO5Ø            :REM*25
64Ø R=INT(RND(1)*5Ø)+1:IFJ$(R,1
    )=""THEN64Ø:IFJ$(R,2)=""THE
    N64Ø                  :REM*25
65Ø IFGR=1THEN X$="NAME THE CAP
    ITAL OF "+"{COMD 6}"+J$(R,1
    ):AN$=J$(R,2)         :REM*234
66Ø IFGR=2THENX$="WHICH STATE'S
     CAPITAL IS "+"{COMD 6}"+J$
    (R,2):AN$=J$(R,1)     :REM*191
67Ø IFGR=3THEN X$="NAME THE STA
    TE FLOWER OF "+"{COMD 6}"+J
    $(R,1):AN$=J$(R,3)    :REM*33
68Ø IFGR=4THENX$="NAME THE STAT
    E BIRD OF "+"{COMD 6}"+J$(R
    ,1):AN$=J$(R,4)       :REM*24Ø
69Ø IFGR=5THENX$="WHAT IS THE N
    ICKNAME OF "+"{COMD 6}"+J$(
    R,1)+"?":AN$=J$(R,5) :REM*Ø
7ØØ PRINT"{SHFT CLR}{CRSR DN}"T
    AB(1)"{CTRL 9}{CTRL 4}QUEST
    ION # ";QN;SPC(14)"{CTRL 4}
    {CTRL 9}SCORE ";SC :REM*191
71Ø PRINT"{HOME}{4 CRSR DNs}{CT
    RL 8}{CRSR RT}"X$:PRINT:PRI
    NT:QN=QN+1            :REM*166
72Ø OPEN1,Ø:PRINT"{CRSR DN}{CTR
    L 4}{2 SPACEs}";:INPUT#1,A$
    :CLOSE1:PRINT         :REM*198
73Ø IFA$=AN$THENPRINTDD$TAB(2)"
    {COMD 1}RIGHT!":GOSUB82Ø:SC
    =SC+2                 :REM*147
74Ø IFA$<>AN$THEN GOSUB87Ø:PRIN
    TDD$TAB(2)"{CTRL 5}SORRY! "
    ;                     :REM*187
75Ø IFA$<>AN$THENPRINT"THE CORR
    ECT ANSWER IS " :PRINTTAB(2
    );"{CRSR DN}{CTRL 4}"AN$
                          :REM*133
76Ø J$(R,1)="":IFGR=2THENJ$(R,2
    )=""                  :REM*243
77Ø FORT=1TO25ØØ:NEXT:NEXT
                           :REM*21
78Ø RETURN                :REM*153
79Ø :                      :REM*83
8ØØ REM *CORRECT ANSWER SOUND*
                          :REM*127
81Ø :                     :REM*1Ø3
82Ø POKES,15Ø:POKES+1,75:POKES+
    5,Ø:POKES+6,2ØØ:POKES+24,15
    :POKES+4,17           :REM*138
83Ø FOR T=ØTO25Ø:NEXT:POKES+4,Ø
    :RETURN               :REM*25
84Ø :                     :REM*129
85Ø REM *INCORRECT ANSWER SOUND
    *                     :REM*251
86Ø :                     :REM*149
87Ø POKES,18 :POKES+1,14:POKES+
    5,Ø:POKES+6,18Ø:POKES+24,15
    :POKES+4,21           :REM*58
88Ø FOR T=ØTO6ØØ:NEXT:POKES+4,Ø
    :RETURN               :REM*192
89Ø :                     :REM*183
9ØØ REM *TITLE SCREEN*    :REM*82
91Ø :                     :REM*2Ø3
92Ø PRINT"{SHFT CLR}{CRSR DN}":
    POKE53281,Ø:POKE5328Ø,3
                          :REM*167
93Ø PRINT"{CTRL 3}"TAB(2)G$I$I$
    I$H$SPC(1)I$I$I$I$SPC(1)I$I
    $I$I$SPC(1)G$I$I$I$H$;
                          :REM*216
94Ø PRINTSPC(1)I$SPC(1)I$I$I$I$
    H$SPC(1)G$I$I$I$I$ :REM*249
95Ø PRINTTAB(2)I$SPC(3)I$SPC(1)
    I$SPC(4)I$SPC(4)I$SPC(3)I$S
    PC(1)I$SPC(1)I$;   :REM*1Ø1
96Ø PRINTSPC(3)I$SPC(1)I$:REM*5
97Ø PRINT"{CTRL 2}"TAB(2)I$SPC(
    3)I$SPC(1)I$SPC(4)I$SPC(4)I
    $SPC(3)I$SPC(1)I$SPC(1)I$;
                          :REM*169
98Ø PRINTSPC(3)I$SPC(1)I$
                           :REM*49
99Ø PRINTTAB(2)I$I$I$I$I$SPC(1)
    I$I$I$SPC(2)I$I$I$SPC(2)I$I
    $I$I$I$SPC(1)I$;      :REM*97
1ØØØ PRINTSPC(1)I$I$I$I$E$SPC(1
    )F$I$I$I$H$           :REM*51
1Ø1Ø PRINTTAB(2)I$SPC(3)I$SPC(1
    )I$SPC(4)I$SPC(4)I$SPC(3)I
    $SPC(1)I$SPC(1)I$; :REM*41
1Ø2Ø PRINTSPC(3)H$SPC(5)I$
                          :REM*114
1Ø3Ø PRINT"{COMD 7}"TAB(2)I$SPC
    (3)I$SPC(1)I$SPC(4)I$SPC(4
    )I$SPC(3)I$SPC(1)I$SPC(1)I
    $;                    :REM*166
1Ø4Ø PRINTSPC(3)I$SPC(5)I$
                          :REM*149
1Ø5Ø PRINTTAB(2)S$SPC(3)S$SPC(1
    )S$SPC(4)S$SPC(4)S$SPC(3)S
    $SPC(1)S$SPC(1)S$;  :REM*1
1Ø6Ø PRINTSPC(3)S$SPC(1)S$S$S$S
    $E$                   :REM*179
1Ø7Ø PRINT:PRINT"{CTRL 3}"TAB(1
    6)G$I$I$H$SPC(1)I$I$I$
                          :REM*1Ø2
1Ø8Ø PRINTTAB(16)I$SPC(2)I$SPC(
    1)I$                  :REM*251
1Ø9Ø PRINTTAB(16)I$SPC(2)I$SPC(
    1)I$I$                :REM*155
11ØØ PRINTTAB(16)I$SPC(2)I$SPC(
    1)I$                  :REM*199
111Ø PRINTTAB(16)F$I$I$E$SPC(1)
    I$:PRINT              :REM*11
112Ø PRINTTAB(3)G$I$I$I$I$SPC(2
    )I$I$I$I$I$SPC(2)G$I$I$I$I
    $H$SPC(2)I$I$I$I$I$;
                          :REM*69
113Ø PRINTSPC(2)I$I$I$I$I$
                          :REM*125
114Ø PRINTTAB(3)I$SPC(8)I$SPC(4
    )I$SPC(4)I$SPC(4)I$SPC(4)I
    $                     :REM*87
115Ø PRINT"{CTRL 2}"TAB(3)I$SPC
    (8)I$SPC(4)I$SPC(4)I$SPC(4
    )I$SPC(4)I$           :REM*55
116Ø PRINTTAB(3)F$I$I$I$H$SPC(4
    )I$SPC(4)I$I$I$I$I$I$SPC(4
    )I$SPC(4)I$I$I$       :REM*9
```

```
117Ø PRINTTAB(7)I$SPC(4)I$SPC(4
     )I$SPC(4)I$SPC(4)I$SPC(4)I
     $                    :REM*1Ø5
118Ø PRINT"{COMD 7}"TAB(7)I$SPC
     (4)I$SPC(4)I$SPC(4)I$SPC(4
     )I$SPC(4)I$          :REM*194
119Ø PRINTTAB(3)S$$S$S$E$SPC(4
     )S$SPC(4)S$SPC(4)S$SPC(4)S
     $SPC(4)S$S$S$S$S$    :REM*6Ø
12ØØ FORT=1TO3ØØØ:NEXT:RETURN
                          :REM*66
121Ø :                    :REM*24Ø
122Ø DATA ALABAMA,MONTGOMERY,CA
     MELLIA,YELLOWHAMMER,HEART
     OF DIXIE             :REM*173
123Ø DATA ALASKA,JUNEAU,FORGET
     ME NOT,WILLOW PTARMIGAN,NO
     RTH TO THE FUTURE :REM*1Ø9
124Ø DATA ARIZONA,PHOENIX,SAGUA
     RO CACTUS,CACTUS WREN,GRAN
     D CANYON             :REM*196
125Ø DATA ARKANSAS,LITTLE ROCK,
     APPLE BLOSSOM,MOCKINGBIRD,
     LAND OF OPPORTUNITY
                          :REM*123
126Ø DATA CALIFORNIA,SACRAMENTO
     ,GOLDEN POPPY,CALIFORNIA V
     ALLEY QUAIL,GOLDEN :REM*83
127Ø DATA COLORADO,DENVER,COLUM
     BINE,LARK BUNTING,CENTENNI
     AL                   :REM*Ø
128Ø DATA CONNECTICUT,HARTFORD,
     MOUNTAIN LAUREL,ROBIN,CONS
     TITUTION             :REM*21Ø
129Ø DATA DELAWARE,DOVER,PEACH
     BLOSSOM,BLUE HEN,FIRST
                          :REM*17Ø
13ØØ DATA FLORIDA,TALLAHASSEE,O
     RANGE BLOSSOM,MOCKINGBIRD,
     SUNSHINE             :REM*135
131Ø DATA GEORGIA,ATLANTA,CHERO
     KEE ROSE,BROWN THRASHER,EM
     PIRE STATE OF THE SOUTH
                          :REM*16Ø
132Ø DATA HAWAII,HONOLULU,HIBIS
     CUS,HAWAIIAN GOOSE,ALOHA
                          :REM*143
133Ø DATA IDAHO,BOISE,SYRINGA,M
     OUNTAIN BLUEBIRD,GEM
                          :REM*12
134Ø DATA ILLINOIS,SPRINGFIELD,
     VIOLET,CARDINAL,PRAIRIE
                          :REM*85
135Ø DATA INDIANA,INDIANAPOLIS,
     PEONY,CARDINAL,HOOSIER
                          :REM*245
136Ø DATA IOWA,DES MOINES,WILD
     ROSE,EASTERN GOLDFINCH,HAW
     KEYE                 :REM*72
137Ø DATA KANSAS,TOPEKA,SUNFLOW
     ER,WESTERN MEADOWLARK,SUNF
     LOWER                :REM*172
138Ø DATA KENTUCKY,FRANKFORT,GO
     LDENROD,CARDINAL,BLUEGRASS
                          :REM*164
139Ø DATA LOUISIANA,BATON ROUGE
     ,MAGNOLIA,EASTERN BROWN PE
     LICAN,PELICAN        :REM*128
14ØØ DATA MAINE,AUGUSTA,WHITE P
     INE CONE & TASSEL,CHICKADE
     E,PINE TREE          :REM*95
141Ø DATA MARYLAND,ANNAPOLIS,BL
     ACK EYED SUSAN,BALTIMORE O
     RIOLE, OLD LINE      :REM*221
142Ø DATA MASSACHUSETTS,BOSTON,
     MAYFLOWER,CHICKADEE,BAY
                          :REM*91
143Ø DATA MICHIGAN,LANSING,APPL
     E BLOSSOM,ROBIN,WOLVERINE
                          :REM*2Ø9
144Ø DATA MINNESOTA,ST. PAUL,LA
     DY'S SLIPPER,COMMON LOON,N
     ORTH STAR            :REM*1Ø5
145Ø DATA MISSISSIPPI,JACKSON,M
     AGNOLIA,MOCKINGBIRD,MAGNOL
     IA                   :REM*19
146Ø DATA MISSOURI,JEFFERSON CI
     TY,HAWTHORN,BLUEBIRD,SHOW
     ME                   :REM*193
147Ø DATA MONTANA,HELENA,BITTER
     ROOT,WESTERN MEADOWLARK,TR
     EASURE               :REM*145
148Ø DATA NEBRASKA,LINCOLN,GOLD
     ENROD,WESTERN MEADOWLARK,C
     ORNHUSKER            :REM*8Ø
149Ø DATA NEVADA,CARSON CITY,SA
     GEBRUSH,MOUNTAIN BLUEBIRD,
     SILVER               :REM*14Ø
15ØØ DATA NEW HAMPSHIRE,CONCORD
     ,PURPLE LILAC,PURPLE FINCH
     ,GRANITE             :REM*79
151Ø DATA NEW JERSEY,TRENTON,PU
     RPLE VIOLET,EASTERN GOLDFI
     NCH,GARDEN           :REM*29
152Ø DATA NEW MEXICO,SANTA FE,Y
     UCCA,ROADRUNNER,LAND OF EN
     CHANTMENT            :REM*147
153Ø DATA NEW YORK,ALBANY,ROSE,
     BLUEBIRD,EMPIRE      :REM*84
154Ø DATA NORTH CAROLINA,RALEIG
     H,DOGWOOD,CARDINAL,TAR HEE
     L                    :REM*176
155Ø DATA NORTH DAKOTA,BISMARCK
     ,WILD PRAIRIE ROSE,WESTERN
      MEADOWLARK,FLICKERTAIL
                          :REM*3
156Ø DATA OHIO,COLUMBUS,SCARLET
      CARNATION,CARDINAL,BUCKEY
     E                    :REM*94
157Ø DATA OKLAHOMA,OKLAHOMA CIT
     Y,MISTLETOE,SCISSORTAIL FL
     YCATCHER,SOONER      :REM*237
158Ø DATA OREGON,SALEM,OREGON G
     RAPE,WESTERN MEADOWLARK,BE
     AVER                 :REM*11
159Ø DATA PENNSYLVANIA,HARRISBU
     RG,MOUNTAIN LAUREL,RUFFLED
      GROUSE,KEYSTONE     :REM*14Ø
16ØØ DATA RHODE ISLAND,PROVIDEN
     CE,VIOLET,RHODE ISLAND RED
     ,LITTLE RHODY        :REM*212
161Ø DATA SOUTH CAROLINA,COLUMB
     IA,CAROLINA JESSAMINE,CARO
     LINA WREN,PALMETTO :REM*8Ø
162Ø DATA SOUTH DAKOTA,PIERRE,P
     ASQUE FLOWER,RINGNECKED PH
     EASANT,COYOTE        :REM*181
163Ø DATA TENNESSEE,NASHVILLE,I
     RIS,MOCKINGBIRD,VOLUNTEER
                          :REM*138
164Ø DATA TEXAS,AUSTIN,BLUEBONN
     ET,MOCKINGBIRD,LONE STAR
                          :REM*161
165Ø DATA UTAH,SALT LAKE CITY,S
     EGO LILY,SEAGULL,BEEHIVE
                          :REM*12
166Ø DATA VERMONT,MONTPELIER,RE
     D CLOVER,HERMIT THRUSH,GRE
     EN MOUNTAIN          :REM*5
167Ø DATA VIRGINIA,RICHMOND,DOG
     WOOD,CARDINAL,OLD DOMINION
                          :REM*223
168Ø DATA WASHINGTON,OLYMPIA,WE
     STERN RHODODENDRON,WILLOW
     GOLDFINCH,EVERGREEN:REM*93
169Ø DATA WEST VIRGINIA,CHARLES
     TON,BIG RHODODENDRON,CARDI
     NAL,MOUNTAIN         :REM*129
17ØØ DATA WISCONSIN,MADISON,WOO
     D VIOLET,ROBIN,BADGER
                          :REM*27
171Ø DATA WYOMING,CHEYENNE,INDI
     AN PAINTBRUSH,MEADOWLARK,E
     QUALITY              :REM*2ØØ
```

Listing 2. Printout program.

```
1Ø REM AFFAIRS OF STATE - MARY
   WILSON                 :REM*147
2Ø REM WILL PRINT A ONE PAGE DA
   TA SHEET{4 SPACEs}ON 1525 OR
    COMPATIBLE PRINTER    :REM*89
3Ø POKE53281,Ø:POKE5328Ø,11:POK
   E646,3                 :REM*147
4Ø DIMA$(51),B$(51),C$(51),D$(5
   1),E$(51)              :REM*52
5Ø FORI=1TO51:READA$(I),B$(I),C
   $(I),D$(I),E$(I):NEXT:REM*48
6Ø OPEN 4,4               :REM*149
7Ø ES$=CHR$(27):REM ESCAPE CODE
                          :REM*113
8Ø PRINT#4,ES$+"B"+CHR$(3):REM
   CONDENSED ON           :REM*83
9Ø PRINT#4,ES$+CHR$(1):REM 1/8
   IN SPACING             :REM*183
1ØØ FOR I=1 TO 51         :REM*16
11Ø PRINT#4,SPC(1Ø)A$(I)SPC(3Ø-
   LEN(A$(I)))B$(I)SPC(3Ø-LEN(
   B$(I)))C$(I);          :REM*75
12Ø PRINT#4,SPC(3Ø-LEN(C$(I)))D
   $(I)SPC(3Ø-LEN(D$(I)))E$(I)
                          :REM*248
13Ø NEXT                  :REM*5
14Ø PRINT#4:CLOSE4        :REM*187
15Ø END                   :REM*23
121Ø DATA STATE,CAPITAL,FLOWER,
     BIRD,NICKNAME        :REM*151 ■
```

Commodore Lanes

When you're ready to strike up a game with your bowling buddies, this C-64 arcade program will be right up your alley.

By JOHN FEDOR

Bowling, a C-64 game you'll find yourself playing as intensely as the real thing, lets you and as many as seven of your friends bowl strikes, spares, gutterballs—anything except splits. You can choose among ten handicapping speeds (the lower the number you select, the faster the ball travels down the lane), and scores are automatically tallied at the end of the game.

Type in the listing and save a copy before running the program.

The scoresheet, along with each player's name and running score, is displayed at the top of the screen. To roll the ball down the bowling lane, press any key other than the space bar.

Players take turns bowling until all ten frames of the scoresheet are filled. As in the real thing, if you bowl a strike (×) in the tenth frame, you get two more balls to roll, and a spare (/) gives you one extra ball. The highest score possible is 300 points, which requires 12 consecutive strikes.

The game uses two machine language routines. One copies the ROM character set into RAM and adjusts the bytes to resemble a bowling pin. The other draws the bowling ball on the screen and checks for a keypress.

If you think stringing up strikes and spares in Bowling is easier than the real thing, hark to the words of the *RUN* staff, who play the game in the late afternoon, when the editor-in-chief isn't looking: It's almost as difficult. Ⓡ

John Fedor, currently a freshman at the College of Lake County, in Illinois, has an avid interest in both computers and math.

Listing 1. Bowling program.

```
Ø REM BOWLING - JOHN FEDOR
                              :REM*15
1Ø IFPEEK(49152)<>76THENFORI=ØT
   O251:READA:POKE49152+I,A:NEX
   T                          :REM*211
2Ø POKE198,Ø:CLR              :REM*1
3Ø DIM N$(8),S(26,8),H(8),B(8)
                              :REM*225
4Ø POKE5328Ø,Ø:POKE53281,Ø:SYS4
   9155                       :REM*19Ø
5Ø FORI=54272TO54296:POKEI,Ø:NE
   XT:POKE54296,15:POKE54273,15
   :POKE54277,17              :REM*242
6Ø PRINT"{SHFT CLR}{CTRL 2}{2 C
   RSR DNs}BOWLING {2 CRSR DNs}
7Ø PRINT"{5 CRSR DNs}HOW MANY P
   LAYERS (1-8):";            :REM*49
8Ø GETA$:IFA$<"1"ORA$>"8"THEN8Ø
                              :REM*185
9Ø PRINTA$                    :REM*224
1ØØ NP=VAL(A$)                :REM*5
11Ø FORI=1TONP                :REM*152
12Ø PRINT"{SHFT CLR}{2 CRSR DNs
    }PLAYER #"I"{CRSR LF}."
                              :REM*155
13Ø PRINT:PRINT"{CRSR DN}ENTER
    YOUR NAME ";              :REM*171
14Ø INPUTN$(I)                :REM*25
15Ø N$(I)=LEFT$(N$(I)+"{39 SPAC
    Es}",2Ø)                  :REM*37
16Ø PRINT"{CRSR DN}ENTER HANDIC
    AP (1-1Ø, 1 HARDEST) ";:INP
    UTH(I)                    :REM*249
17Ø IFH(I)<1ORH(I)>1ØTHEN16Ø
                              :REM*221
18Ø NEXTI                     :REM*2Ø1
19Ø POKE53281,1:PRINT"{SHFT CLR
    }":POKE53281,Ø            :REM*1Ø2
2ØØ PRINT"{CTRL 7}PLAYERS{COMD
    7} {SHFT B} 1{SHFT B} 2{SHF
    T B} 3{SHFT B} 4{SHFT B} 5{
    SHFT B} 6{SHFT B} 7{SHFT B}
     8{SHFT B} 9{SHFT B} 1Ø{SHF
    T B}{CTRL 2}"             :REM*21Ø
21Ø FORI=1TONP                :REM*252
22Ø PRINTLEFT$(N$(I),7) :REM*26
23Ø NEXTI                     :REM*251
24Ø FORF=1TO1Ø:FORP=1TONP
                              :REM*27
25Ø PRINT"{HOME}{11 CRSR DNs}"
                              :REM*171
26Ø FORI=1TO39:PRINT"{CTRL 6}{S
    HFT C}{CTRL 2}";:NEXTI:PRIN
    T:PRINT:PRINT:PRINT:PRINT:P
    RINT:PRINT                :REM*242
27Ø PRINT:PRINT:PRINT:FORI=1TO3
    9:PRINT"{CTRL 6}{SHFT C}{CT
    RL 2}";:NEXTI             :REM*174
28Ø REM SET UP PINS NOW (TRON)
                              :REM*1Ø1
29Ø PRINT"{HOME}{13 CRSR DNs}"
                              :REM*17
3ØØ FORY=1TO7                 :REM*19Ø
31Ø Z=-(Y=3ORY=5)-2*(Y=2ORY=6)-
    3*(Y=1ORY=7)              :REM*144
32Ø PRINTTAB(34+Z)"{CTRL 3}{SHF
    T X}{CTRL 2} ";           :REM*32
33Ø IFY>2ANDY<6THENPRINT"{CTRL
    3}{SHFT X}{CTRL 2}";:REM*5Ø
34Ø PRINT:NEXTY               :REM*78
35Ø B=1:REM WHICH BALL #
                              :REM*144
36Ø PRINT"{HOME}{11 CRSR DNs}{C
    TRL 8}PLAYER UP:{CTRL 4}"N$
    (P)"{CTRL 2}"             :REM*73
37Ø GOSUB38Ø:GOTO59Ø          :REM*29
38Ø Y=15:DY=1:POKE198,Ø:REM*143
39Ø B(P)=B(P)+1:D=Ø           :REM*27
4ØØ POKE828,Y:POKE829,DY:POKE83
    Ø,1Ø+H(P)*12:SYS49152
                              :REM*154
41Ø Y=PEEK(828)               :REM*9Ø
42Ø :                         :REM*223
43Ø FORX=1TO33:POKE1Ø23+Y*4Ø+X,
    32:POKE1Ø24+Y*4Ø+X,81
                              :REM*58
44Ø FORT7=1TO2:NEXTT7,X :REM*23
45Ø X=X-1                     :REM*47
46Ø X=X+1                     :REM*37
47Ø A1=1Ø24+Y*4Ø+X            :REM*219
48Ø IFPEEK(A1)=88THEN51Ø
                              :REM*1Ø4
49Ø IFX=39THENS(B(P),P)=D:RETUR
    N                         :REM*41
5ØØ POKEA1-1,32:POKEA1,81:GOTO4
    6Ø                        :REM*171
```

RUN it right: **C-64**

```
51Ø IFPEEK(A1)=88THENPOKEA1,32:
    D=D+1:POKE54276,Ø:POKE54276
    ,129                :REM*192
52Ø IFPEEK(A1-39)=88THENPOKEA1-
    39,32:D=D+1:POKE54276,Ø:POK
    E54276,129          :REM*143
53Ø IFPEEK(A1+41)=88THENPOKEA1+
    41,32:D=D+1:POKE54276,Ø:POK
    E54276,129          :REM*67
54Ø IFPEEK(A1+82)=88THENPOKEA1+
    82,32:D=D+1:POKE54276,Ø:POK
    E54276,129          :REM*2Ø2
55Ø IFPEEK(A1-78)=88THENPOKEA1-
    78,32:D=D+1:POKE54276,Ø:POK
    E54276,129          :REM*119
56Ø IFPEEK(A1-117)=88THENPOKEA1
    -117,32:D=D+1:POKE54276,Ø:P
    OKE54276,129        :REM*14Ø
57Ø IFPEEK(A1+123)=88THENPOKEA1
    +123,32:D=D+1:POKE54276,Ø:P
    OKE54276,129        :REM*58
58Ø GOTO49Ø             :REM*164
59Ø REM BALL END OF ALLEY
                        :REM*66
6ØØ POKE1Ø23+X+Y*4Ø,32  :REM*13Ø
61Ø POKE55296+(P+2)*4Ø+5+F*3+B,
    1                   :REM*47
62Ø Z=1Ø24+(P+2)*4Ø+5+F*3+B:IFD
    <1ØTHENPOKEZ,48+D   :REM*147
63Ø IFB=2ANDD<1ØTHENPOKEZ,48+D
                        :REM*2
64Ø IFB=1ANDD=1ØTHENPOKEZ,24
                        :REM*237
65Ø IFB=2ANDD+S(B(P)-1,P)=1ØTHE
    NPOKEZ,78           :REM*245
66Ø IFB=1ANDD=1ØTHENB(P)=B(P)+1
    :GOTO68Ø            :REM*112
67Ø IFB=1THENB=2:GOTO37Ø
                        :REM*125
68Ø IFF<1ØTHEN71Ø       :REM*63
69Ø IFB=1THENBU=2:GOTO72Ø
                        :REM*2Ø8
7ØØ IFB=2THENY=S(B(P),P)+S(B(P)
    -1,P):IFY=1ØTHENBU=1:GOTO72
    Ø                   :REM*62
71Ø NEXTP,F:GOTO87Ø:REM SCORING
                        :REM*1Ø6
72Ø REM BONUS BALL      :REM*14
73Ø PRINT"{HOME}{13 CRSR DNs}"
                        :REM*218
74Ø IF S(19,P)=1Ø AND S(21,P)<1
    ØANDS(21,P)>ØTHEN8ØØ:REM*78
75Ø FORY=1TO7           :REM*114
76Ø Z=-(Y=3ORY=5)-2*(Y=2ORY=6)-
    3*(Y=1ORY=7)        :REM*8Ø
77Ø PRINTTAB(34+Z)"{CTRL 3}{SHF
    T X}{CTRL 2} ";     :REM*227
78Ø IFY>2ANDY<6THENPRINT"{CTRL
    3}{SHFT X}{CTRL 2}";
                        :REM*247
79Ø PRINT:NEXTY         :REM*1Ø
8ØØ D=Ø:B=B+1:GOSUB38Ø:BU=BU-1
                        :REM*11Ø
81Ø POKE1Ø23+X+Y*4Ø,32:POKE5529
    6+(P+2)*4Ø+5+F*3+B,1:REM*35
82Ø Z=1Ø24+(P+2)*4Ø+5+F*3+B
                        :REM*212
83Ø IFD=1ØTHENPOKEZ,24  :REM*17Ø
84Ø IFD<1ØTHENPOKEZ,D+48
                        :REM*238
85Ø IFBUTHEN72Ø         :REM*128
86Ø GOTO71Ø             :REM*163
87Ø REM SCORING ROUTINE:REM*25Ø
88Ø PRINT"{HOME}{1Ø CRSR DNs}"
                        :REM*11
89Ø FORI=1TO12:PRINT"{39 SPACEs
    }":NEXTI            :REM*12Ø
9ØØ PRINT"{HOME}{11 CRSR DNs}"
                        :REM*38
91Ø FORP=1TONP:PRINTN$(P)TAB(2Ø
    );                  :REM*225
92Ø SC=Ø:B(P)=Ø:FORF=1TO9
                        :REM*62
93Ø B(P)=B(P)+1:FB=S(B(P),P)
                        :REM*147
94Ø B(P)=B(P)+1:SB=S(B(P),P)
                        :REM*47
95Ø SC=SC+FB+SB:IFFB+SB=1ØTHENS
    C=SC+S(B(P)+1,P)    :REM*139
96Ø IFFB=1ØTHENSC=SC+S(B(P)+2,P
    ):IFS(B(P)+1,P)=1ØTHENSC=SC
    +S(B(P)+3,P)        :REM*2
97Ø NEXTF:B(P)=B(P)+1   :REM*87
98Ø B1=S(B(P),P):B2=S(B(P)+1,P)
    :B3=S(B(P)+2,P)     :REM*127
99Ø IFB1=1ØTHENB2=B3:B3=S(B(P)+
    3,P)                :REM*167
1ØØØ SC=SC+B1+B2+B3     :REM*189
1Ø1Ø PRINTSC:NEXTP      :REM*71
1Ø2Ø REM END ROUTINE    :REM*18
1Ø3Ø PRINT"{CRSR DN}PLAY AGAIN
    (Y/N) ?"            :REM*211
1Ø4Ø GETA$:IFA$<>"Y"ANDA$<>"N"T
    HEN1Ø4Ø             :REM*3
1Ø5Ø IFA$="Y"THENRUN    :REM*13
1Ø6Ø PRINT"{SHFT CLR}{CRSR DN}B
    YE":END             :REM*79
1Ø7Ø DATA76,1Ø7,192,169,8,32,21
    Ø,255,173,14,22Ø,41,254,14
    1,14,22Ø            :REM*1Ø9
1Ø8Ø DATA165,1,41,251,133,1,162
    ,Ø,189,Ø,2Ø8,157,Ø,48,189,
    Ø                   :REM*239
1Ø9Ø DATA2Ø9,157,Ø,49,189,Ø,21Ø
    ,157,Ø,5Ø,189,Ø,211,157,Ø,
    51                  :REM*254
11ØØ DATA189,Ø,212,157,Ø,52,189
    ,Ø,213,157,Ø,53,189,Ø,214,
    157                 :REM*59
111Ø DATAØ,54,189,Ø,215,157,Ø,5
    5,232,2Ø8,2Ø5,32,234,192,4
    1,24Ø               :REM*94
112Ø DATA9,12,141,24,2Ø8,162,Ø,
    189,99,192,157,192,5Ø,232,
    224,8               :REM*35
113Ø DATA2Ø8,245,96,Ø,24,24,24,
    6Ø,126,126,6Ø,169,Ø,133,25
    1,133               :REM*67
114Ø DATA252,162,Ø,24,165,251,1
    Ø9,6Ø,3,133,251,165,252,1Ø
    5,Ø,133             :REM*182
115Ø DATA252,232,224,4Ø,2Ø8,237
    ,24,165,252,1Ø5,4,133,252,
    16Ø,Ø,169           :REM*2ØØ
116Ø DATA32,145,251,174,6Ø,3,17
    2,61,3,192,1,2Ø8,14,2Ø2,56
    ,165                :REM*222
117Ø DATA251,233,4Ø,133,251,165
    ,252,233,Ø,133,252,192,2,2
    Ø8,14,232           :REM*114
118Ø DATA24,165,251,1Ø5,4Ø,133,
    251,165,252,1Ø5,Ø,133,252,
    142,6Ø,3            :REM*2Ø7
119Ø DATA224,13,24Ø,4,224,21,2Ø
    8,8,173,61,3,73,3,141,61,3
                        :REM*42
12ØØ DATA169,81,16Ø,Ø,145,251,1
    74,62,3,16Ø,Ø,136,2Ø8,253,
    2Ø2,2Ø8             :REM*215
121Ø DATA248,32,228,255,2Ø8,3,7
    6,141,192,96,165,1,9,4,133
    ,1                  :REM*1Ø4
122Ø DATA173,14,22Ø,9,1,141,14,
    22Ø,173,24,2Ø8,96   :REM*144
```

■

RUN's Checksum

By BOB KODADEK

TYPE IN *RUN*'s CHECKSUM, which serves for both the C-64 and for the C-128 in either 40- or 80-Column mode, and save it to disk before running. When typing in a program from *RUN*, first load and run *RUN*'s Checksum. The screen will display the 64 or 128 version, whichever is appropriate, and a SYS number that deactivates the Checksum when typed in and followed by return. Always disable *RUN*'s Checksum before attempting to run another program. The same SYS number will reactivate the Checksum.

Keep the following in mind: You can abbreviate Basic keywords; spaces affect the checksum only when within quotes; and the order of characters affects the checksum.

When you press return after typing in a program line, a one-, two-, or three-digit number from 0 to 255 appears directly below the line just entered. If this number matches the checksum value in the program listing, the line is correct. You enter the next line by typing it in right over the previous line's checksum value. If the number that appears *doesn't* match the listing's checksum value, carefully compare the line with the magazine listing to find your error. Then move the cursor back up to the line and make your corrections. Now, after you press return, the correct checksum value should appear. Continue entering the listing in this way until all the lines have been correctly typed. Then deactivate *RUN*'s Checksum, using the SYS number. Save the finished program. R

Listing 1. *RUN*'s Checksum program.

```
10 REM RUN'S CHECKSUM 64/128 - WRITTEN BY
   BOB KODADEK
20 MO=128:SA=3328:IF PEEK(40960)THEN MO=64
   :SA=49152
30 FOR I=0TO140:READ B:CK=CK+B:POKE SA+I,B
   :NEXT
40 IFCK<>16951 THENPRINT"DATA ERROR!":END
50 PRINTCHR$(147)STR$(MO)" RUN CHECKSUM":
   PRINT
60 PRINT"TO TOGGLE ON OR OFF, SYS"SA:IF MO
   =128 THEN 90
70 POKESA+13,124:POKESA+15,165:POKESA+25,1
   24:POKESA+26,165
80 POKESA+39,20:POKESA+41,21:POKESA+123,20
   5:POKESA+124,189
90 POKESA+4,INT(SA/256):SYS SA:NEW
100 DATA 120,162,24,160,13,173,4,3,201,24,
    208,4,162,13,160,67,142,4,3,140
110 DATA 5,3,88,96,32,13,67,152,72,169,0,1
    41,0,255,133,176,133,180,166,22
120 DATA 164,23,134,167,132,168,170,189,0,
    2,240,58,201,48,144,7,201,58,176
130 DATA 3,232,208,240,189,0,2,240,42,201,
    32,208,4,164,180,240,31,201,34
140 DATA 208,6,165,180,73,1,133,180,230,17
    6,164,176,165,167,24,125,0,2,133
150 DATA 167,165,168,105,0,133,168,136,208
    ,239,232,208,209,169,42,32,210
160 DATA 255,165,167,69,168,170,169,0,32,5
    0,142,169,32,32,210,255,32,210
170 DATA 255,169,13,32,210,255,104,168,96■
```


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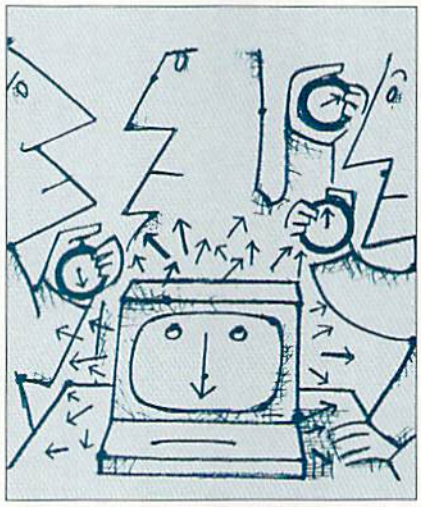
Time-Keeper 128

Now you can keep time while you're programming on the C-128.

By ROBERT KODADEK

Time-Keeper 128 is a handy clock/calendar (C-64 users got one in last month's column) that keeps the time, month, day and year in the upper-right corner of the screen while your computer is running. The program is interrupt-driven, RAM resident and transparent to many other Basic and ML programs.

Time-Keeper works on both 40- and 80-column screens and has a built-in alarm (which you can adjust for visual and/or audible signals) and an autoleap-year function. The clock/calendar is updated once per second and the data is stored in easily accessible RAM locations. This information can then be used by one of your own custom applications, such as a bulletin board system.



Entering the Listings

Time-Keeper 128 has two listings. Listing 1, Time-Keeper 128, is a boot program to load the object file and set the date, time and alarm. Listing 2, Time-Keeper File Generator, creates the fast-loading object file, OB.TK 128, on your disk. After you've typed in and saved both listings, using *RUN*'s Checksum to check for typing errors, run the file-generator program. If all goes well, the error channel will report the message, 00,OK,00,00. List the directory to be sure the new file is present.

Whenever you want to use Time-Keeper, load and run the boot program. You'll be prompted to enter the correct time and date and whether you wish to set the alarm. Time-Keeper's display begins with an asterisk followed by the month, date, year, hours, minutes, seconds and the characters "al," for alarm.

The leading asterisk prevents the Basic editor from replacing or deleting a Basic program line should you press return while the cursor is resting on the top line of the screen. Whenever the alarm is set, the characters "al" will appear in reverse video. When the alarm goes off, these characters will flash while the SID chip emits a bell-like chime for about 30 seconds. If you don't care to listen to it, cancel the chiming with the shift/control/C combination.

Though the display is continuous, you may turn it off at any time with shift/control/F and back on again with shift/control/N. These key combinations are rarely found in programs, so they shouldn't interfere with any program that's running concurrently with Time-Keeper.

Using Time-Keeper 128

Time-Keeper may be used with almost any Basic program, including programs published in *RUN*. Time-Keeper is compatible with RUN Script 128, version 2.40, published in the December 1986 issue and on the Productivity Pak II disk. It also works with version 2.56 on the Productivity Pak III disk as long as the spelling checker is not activated.

Unfortunately, the spelling checker may use the memory occupied by Time-Keeper and lock up the computer. RUN Script and other word processors continually update the 80-column screen and, because of this, a conflict can result over control of the VDC chip. For this reason, the clock display must be off before you load and run the word processor.

To view the clock/calendar display from within RUN Script, press F1 followed by shift/control/N. Turn the display off again with F1 followed by shift/control/F. If you leave the continuous display on, garbage can appear on the first line of your text display. These characters are not stored in RAM and will not affect your document in any way. The original text can always be returned by pressing the restore key, but it's best to view the display and then turn it off again.

Time-Keeper has also been tested with Notepad 128, Presto-Write 128, Shopping List, SpeedScript 128, and the Merlin 128 assembler from Roger Wagner Publishing. You'll find that it will also work with almost any Basic program. In most instances, Time-Keeper should be the very first program you load and run. When loading Notepad 128, however, don't run the boot program. Instead, load the object file with the Boot command. Since Time-Keeper uses the same time-of-day clock, it's not necessary to reset the time for Notepad.

For 128 Programmers

The following RAM locations contain the data in the format indicated:

Location	Data	Format
6410	tenths	BCD
6411	seconds	BCD
6412	minutes	BCD
6413	hours	BCD
6414	month	decimal ►

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Location	Data	Format
6415	date	decimal
6416	year	decimal

Binary Coded Decimal data (BCD) can be converted (unpacked) easily by using the 128's built-in hex$ command. Use the following routine to read and print the time from within one of your programs:

```
100 FOR I = 0 TO 2:B = PEEK(6413 – I) AND
    127
110 PRINT RIGHT$(HEX$(B),2);
120 IF I<2 THEN PRINT ":";
130 NEXT
```

Use the following routine to read and print the current date:

```
150 FOR I = 0 TO 2:B = PEEK(6414 + I)
160 PRINT MID$(STR$(B),2);
170 IF I<2 THEN PRINT"/";
180 NEXT
```

Interrupting the VDC Chip

The *C-128 Programmer's Reference Guide* states that you shouldn't try to write to the 80-column chip either directly or indirectly by way of interrupts. Generally this statement is correct, but you can work around it with a little ingenuity. Since there is no way to safely save the value of the VDC registers during interrupts, the best thing to do is not disturb them while they are in use. It's too bad that the operating system doesn't set a flag to signal when an important 8563 routine is active, but that would have made things too easy.

The first thing you can do is limit the number of accesses to the chip. The IRQ hits about 60 times a second, so your routine would be bombarding the chip with job requests. A built-in time delay can solve this problem easily by limiting the number of screen updates. Time-Keeper uses a one-second delay in its interrupt routine as the first trick.

The next trick is to check to see whether the Basic screen editor is using the display chip at the present time, and to exit the routine if it is. This can be established by examining the last JSR address on the stack and see if it falls within the range of one of the screen editor's ROM routines. If you write your own programs that access the 80-column chip, it is wise to use the built-in ROM routines rather than your own. R

Bob Kodadek spends his free time writing computer programs and running his software business, Family Software.

Listing 1. Time-Keeper 128 boot program.

```
1 REM TIME-KEEPER 128{2 SPACEs}
  4Ø/8Ø COLUMN              :REM*182
2 REM (C) 1987 BOB KODADEK
                            :REM*1Ø9
3 REM                       :REM*146
4 BANK 15:F$="OB.TK 128":PRINT"
  LOADING "F$:BLOAD (F$)
                            :REM*2Ø9
5 PRINT CHR$(147) CHR$(14) CHR$
  (13) SPC(15)"{SHFT T}IME-{SHF
  T K}EEPER 128":PRINT :REM*169
6 DIM MD(12):FORI=1TO12:READ MD
  (I):NEXT                  :REM*166
7 ML=DEC("19ØØ"):CL=DEC("19ØC")
  :U$=CHR$(145)+CHR$(145)
                            :REM*33
8 FORI=ØTO3:E$=E$+CHR$(32):NEXT
                            :REM*236
9 FORI=ØTO3:E$=E$+CHR$(157):NEX
  T                         :REM*2Ø2
1Ø PRINT SPC(8)"{SHFT S}ET THE
  DATE (MN/DT/YR)":PRINT
                            :REM*44
11 PRINT"MONTH{2 SPACEs}(1-12)"
  E$;:INPUT MN              :REM*245
12 IF MN<1 OR MN>12 THEN PRINT
  U$:GOTO11                 :REM*187
13 S$=RIGHT$(STR$(MD(MN)),2)+")
  "                         :REM*223
14 PRINT SPC(1)"DATE{2 SPACEs}(
  1-"S$ E$;:INPUT DT        :REM*218
15 IF DT<1 OR DT>MD(MN) THEN PR
  INT U$:GOTO14             :REM*16Ø
16 PRINT SPC(1)"YEAR (86-99)"E$
  ;:INPUT YR                :REM*2Ø1
17 IF YR<86 OR YR>99 THEN PRINT
   U$:GOTO16                :REM*17
18 PRINT:PRINT SPC(8)"{SHFT S}E
  T THE TIME (HR/MS/AM-PM)"
                            :REM*127
19 GOSUB24:POKE CL,MS:POKE CL+1
  ,HR                       :REM*145
2Ø POKE CL+2,MN:POKE CL+3,DT:PO
  KE CL+4,YR                :REM*217
21 PRINT:PRINT SPC(8)"{SHFT S}E
  T THE {SHFT A}LARM? (Y OR N)
  ";:INPUT A$               :REM*36
22 HR=Ø:MS=Ø:IF A$="Y" OR A$="{
  SHFT Y}" THEN GOSUB 24
                            :REM*83
23 POKE CL+5,MS:POKE CL+6,HR:SY
  S ML:END                  :REM*213
24 PRINT:PRINT"HOURS{2 SPACEs}(
  1-12)"E$;:INPUT HR        :REM*193
25 IF HR<1 OR HR>12 THEN PRINT
  U$:GOTO24                 :REM*19
26 PRINT SPC(1)"MINS{2 SPACEs}(
  Ø-59)"E$;:INPUT MS        :REM*113
27 IF MS >59 THEN PRINT U$:GOTO
  26                        :REM*161
28 PRINT"AM-PM{3 SPACEs}(A/P)"E
  $;:INPUT P$               :REM*5
29 IF P$ <>"A" AND P$<>"P"THEN
  PRINT U$:GOTO28           :REM*223
3Ø FLAG=Ø:IF P$="P" THEN FLAG =
   128                      :REM*75
31 BY=HR:GOSUB33:HR=BY OR FLAG
                            :REM*163
32 BY=MS:GOSUB33:MS=BY:RETURN
                            :REM*2Ø7
33 X=INT(BY/1Ø):Y=BY-1Ø*X:BY=16
  *X+Y:RETURN               :REM*111
34 DATA 31,29,3Ø,31,3Ø,3Ø,31,31
  ,3Ø,31,3Ø,31              :REM*39
```

Listing 2. Time-Keeper File Generator program.

```
1 REM TIME-KEEPER 128 OBJECT
                            :REM*187
2 REM (C) 1987 BOB KODADEK
                            :REM*1Ø9
4 F$="OB.TK 128":PRINT"PLEASE W
  AIT, READING DATA....":REM*46
5 BANK 15:IF PEEK(215)=128 THEN
   FAST                     :REM*8Ø
6 DO UNTIL I=7Ø8:READ BY:POKE D
  EC("19ØØ")+I,BY:CK=CK+BY
                            :REM*129
7 I=I+1:LOOP:IF CK<> 65524 THEN
  PRINT"DATA ERROR!":END
                            :REM*56
8 PRINT:PRINT"PUT FORMATTED DIS
  K INTO DRIVE & PRESS RETURN":
  SYS65487                  :REM*5
9 SCRATCH (F$):BSAVE (F$),P64ØØ
  TO P71Ø8:PRINT:PRINT DS$
                            :REM*137
1Ø DATA 76,19,25,76,67,25,76,16
  5,25,Ø,Ø,Ø,Ø,129,9,7,87,Ø,12
  9,162,146,142             :REM*216
11 DATA 9,25,173,15,221,41,127,
  141,15,221,174,12,25,16Ø,2,1
  73,13,25,32,84            :REM*154
12 DATA 25,173,15,221,9,128,141
  ,15,221,174,17,25,173,18,25,
  24Ø,8,32,94,25            :REM*59
13 DATA 169,128,141,144,26,169,
  127,141,13,22Ø,32,1Ø7,25,169
  ,129,141,13               :REM*119
14 DATA 22Ø,32,144,27,96,2Ø1,18
  ,24Ø,4,2Ø1,146,2Ø8,2,73,128,
  141,11,221,142            :REM*231
15 DATA 1Ø,221,14Ø,9,221,14Ø,8,
  221,96,169,128,16Ø,25,141,24
  ,3,14Ø,25,3               :REM*1Ø3
16 DATA 169,147,141,2Ø,3,169,26
  ,141,21,3,96,216,169,127,141
  ,13,221,172,13            :REM*Ø
17 DATA 221,48,23,32,61,246,32,
```

```
   225,255,208,15,32,107,25,32,
   9,225,32,0,192          :REM*231
18 DATA 32,144,27,108,0,10,76,9
   5,250,169,127,141,13,220,32,
   138,255,169             :REM*245
19 DATA 129,141,13,220,96,36,21
   5,16,13,162,18,169,0,32,204,
   205,232,169,56          :REM*113
20 DATA 32,204,205,173,130,27,2
   40,8,173,144,26,73,128,141,1
   44,26,160,0             :REM*116
21 DATA 173,14,25,32,71,26,200,
   173,15,25,32,71,26,200,173,1
   6,25,32,71,26           :REM*106
22 DATA 200,162,32,173,13,25,72
   ,41,16,240,2,162,49,138,32,1
   14,26,104,32            :REM*220
23 DATA 99,26,200,173,12,25,32,
   90,26,200,173,11,25,32,90,26
   ,169,1,44,13            :REM*211
24 DATA 25,16,2,169,16,32,114,2
   6,200,169,1,44,144,26,16,2,1
   69,129,32,114           :REM*84
25 DATA 26,169,12,44,144,26,16,
   2,169,140,32,114,26,160,16,2
   08,3,153,0,4            :REM*173
26 DATA 200,185,102,26,240,10,3
   6,215,16,243,32,202,205,76,5
   4,26,96,141             :REM*28
27 DATA 145,26,169,0,170,236,14
   5,26,240,8,248,24,105,1,216,
   232,208,243,72          :REM*27
28 DATA 74,74,74,74,32,99,26,10
   4,41,15,24,105,48,201,48,208
   ,6,192,0,208,2          :REM*26
29 DATA 169,32,153,121,26,200,9
   6,42,32,48,57,47,48,56,47,56
   ,55,32,49,50            :REM*199
30 DATA 58,51,48,58,48,48,80,32
   ,65,76,0,128,0,0,60,216,160,
   3,185,8,221             :REM*168
31 DATA 153,10,25,136,16,247,20
   6,146,26,208,25,169,60,141,1
   46,26,44,143            :REM*223
32 DATA 26,16,15,186,189,7,1,20
   1,195,144,4,201,208,144,3,32
   ,179,25,44,13           :REM*85
33 DATA 25,48,70,173,9,25,208,7
   0,169,255,141,9,25,174,14,25
   ,224,2,208,17           :REM*134
34 DATA 169,29,172,16,25,192,88
   ,240,11,192,92,240,7,192,96,
   240,3,189,131           :REM*129
35 DATA 27,205,15,25,208,23,160
   ,1,140,15,25,238,14,25,173,1
   4,25,201,13             :REM*42
36 DATA 208,18,140,14,25,238,16
   ,25,208,10,238,15,25,208,5,1
   69,0,141,9,25           :REM*112
37 DATA 173,18,25,240,67,173,13
   ,221,41,4,240,5,169,45,141,1
   30,27,173,130           :REM*245
38 DATA 27,208,7,169,128,141,14
   4,26,208,43,206,129,27,173,1
   29,27,41,207            :REM*135
39 DATA 208,33,169,15,141,24,21
   2,160,9,162,0,140,5,212,142,
   6,212,169,48            :REM*55
40 DATA 141,1,212,169,32,141,4,
   212,169,33,141,4,212,206,130
   ,27,165,211             :REM*60
41 DATA 164,212,201,5,208,33,19
   2,20,208,5,169,0,141,130,27,
   192,39,208,8            :REM*28
42 DATA 173,143,26,9,128,141,14
   3,26,192,21,208,8,173,143,26
   ,41,127,141             :REM*213
43 DATA 143,26,76,101,250,0,0,0
   ,31,28,31,30,31,30,31,31,30,
   31,30,31,32             :REM*193
44 DATA 125,255,147,142,13,13,3
   2,32,32,32,32,84,73,77,69,45
   ,75,69,69,80            :REM*220
45 DATA 69,82,32,49,50,56,13,32
   ,40,67,41,32,49,57,56,55,32,
   66,79,66,32,75          :REM*120
46 DATA 79,68,65,68,69,75,13,0,
   96                      :REM*50
```

■

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TELECOMPUTING WORKSHOP

Tips from readers and a request for help in creating a talking terminal program, plus more telecomputing advice.

By DAVID BRADLEY

I RECENTLY RECEIVED A LETTER from W. H. Lambdin of East Bernstadt, Kentucky, about the Volks 6480/Aprotek 12C modem. He thinks I've been doing you all a disservice by "blackballing" it. He points out that the 6480, in contrast to the Commodore 1670, won't answer when you don't want it to; it doesn't put any stress on the user port; it isn't as heat sensitive as the 1670; and it comes with a five-year warranty, compared to the 1670 with its standard Commodore 90-day warranty.

However, he does admit that the 6480 "won't work with just any terminal software" and that "the terminal software that comes with it is so full of bugs, you can't upload with it, and if you download a combination of Basic and machine language, you won't be able to get a working copy." (I never heard that one before.)

He goes on to mention a variety of terminal programs that have been modified to work with the 6480. Two good sources of programs for the 6480 that I've found are Public Domain Solutions, PO Box 832, Tallevast, FL 34270, and the telecommunications download area of Q-Link.

I think the 6480/12C is a good modem; it would just be a lot better if it worked more like some of the other modems on the market and if the manual that comes with it gave you all the information necessary to make it "sing and dance" using Basic.

By the way, regardless of our difference of opinion, I do appreciate the constructive criticism!

PC Pursuit

Matt Sussdorff of Naples, Florida, wrote in about an online network called PC Pursuit. It lets you call 27 different area codes during evenings and weekends for just $25 per month, and you can access all sorts of systems, like Mnematics Videotex, that would otherwise cost you long-distance fees. For more information about PC Pursuit, call 1-800-TELENET.

This service isn't especially new; I've just never used it. Remember, I don't know everything. If, like Matt, you want to tell your fellow modem users about a service or product you like or something you did, write to me about it!

Talking Terminal?

If anybody can help a blind Commodore user who's interested in writing a talking terminal program with his Votalker C-64 speech synthesizer, please write to Philip Halton, 471 Chicopee St., Chicopee, MA 01013. He'd really appreciate it.

BBS Money-Saver

I got a message on Q-Link from "Asgardian" concerning the cost of a phone line for running a BBS. He suggests that you get a metered line instead of a normal one. This will drop the cost of the line considerably, as long as you don't make any outgoing calls. However, if you run a PunterNet node, you're better off staying with a normal line. A very active node can attempt to make dozens of calls in one night.

Handy Products

Aprotek, 1071-A Avenida Acaso, Camarillo, CA 93010, has some useful products for the C-64 and C-128 I thought you should know about. One is a cable that extends the user port, and another is a cable that extends the cartridge port. Both cables are about 12 inches long. Just note the "This Side Up" stickers on each end, and make sure you plug the cables in accordingly. Another item they have is an 8-foot long serial cable that's handy if you want to locate printers and/or disk drives on both sides of your computer/BBS setup.

The following note came to me via Q-Link from "JIM64C": "I just finished looking at the November issue of *RUN*, and I want to mention that Radio Shack offers modular pliers that can be used for attaching new plugs to the ends of phone cables. They're available for about $8.00. In connecting the plugs, be sure you reverse the color code from one end of the cable to the next (if the black is on the left side at one end, then it must be on the right side at the other end). I don't know why, but this is the only way to get the cable to work properly. You write a great article; keep up the good work."

To make things a bit clearer, if you hold both ends of a modular phone cable beside each other, with the tabs up, you'll notice that the colors are reversed. This is as it should be. If you replace the plugs, make sure the colors are reversed when you look at the cable in this manner, before you do the final crimping with your special pliers.

Elusive Perfection

Phillip Turner of Clanton, Alabama, is planning to get what he considers to be the "perfect modem," a Hayes SmartModem, and he wants to know what the "perfect" terminal program for it would be. As I've said before, there are a lot of very good terminal programs available, but I have yet to see the "perfect" one. Two exceptional public domain/shareware terminal programs that support the SmartModem are MultiTerm 5.2 and Darkterm 4.b. A couple of commercial programs are Sixth Sense and BobsTermPro.

Don't forget to send me specifications for what you'd consider the ultimate terminal program (see the December 1987 column for survey details).

Q *I've been searching for a hard drive (at least 20 Mbytes) that's compatible with the C-64/128 to use on my 24-hour BBS. The ones I've seen are the Xetec Lt. Kernal and the InConTrol Data Chiefs. Which of these would you recommend?*

—ROBERT NATALY
WESTPORT, MA

A Hard drives, with their large storage capacity, are used on Commodore machines mostly for BBSs. Of the two you mentioned, my only extensive experience has been with the Lt. Kernal. I've seen the ICT but have never really worked with it. I know the Lt. Kernal offers amazing speed, and from what I know of it and the ICT, I would

recommend the Lt. Kernal. I'd appreciate it if anyone who has a hard drive for their Commodore would write and let me know what they think of it, and I'll pass the information along.

Q *Last December I purchased an FSD-1 disk drive from Emerald Components International. I'd heard good reports about its performance and how ECI had overcome the problems the 1541s have. It performed wonderfully—until now. Last week I joined Q-Link, and when I tried to load the Q-Link software, it knocked the stuffing out of my drive. Q-Link said I should buy a 1541 or 1571 from Commodore, because the fastload in the FSD-1 isn't compatible with the Q-Link fastload. There must be another way to solve this problem!*

—BARRY FREEMAN
HERNDON, VA

A What you describe is very strange, because I have an FSD-1 and use it all the time with Q-Link with no trouble at all. However, mine has no fastload. I suggest you contact ECI, tell them your story and see what they have to say about it. And please keep us informed!

Q *I'm in desperate need of help. I love to telecommunicate, but every time I'm downloading valuable information, my carrier gets interrupted. You could do me a great favor by printing a program in your column that shuts off the auto-answer of a Telelearning modem.*

—NATHAN BOYD
WESTLAKE, LA

A It sounds to me as if call-waiting might be the culprit. Once you make contact with a BBS or network, your modem shouldn't answer the phone. However, if you have call-waiting, the beeps and/or clicks probably break your connection and then your modem may very well answer the phone. Call your local phone company for information on how to disable or eliminate call-waiting.

Q *I bought one of the first Commodore 128s that came out and had no problems with it until I bought a modem. I can boot up my terminal program (Common Sense), dial a number, make the connection and run as long as I want. However, if the computer has been on for at least 15 minutes, when I disconnect from that first number, my screen fills with garbage and I can't get back online except by shutting down completely for about half an hour.*

I've tried disconnecting the phone lines and the printer, shutting off the disk drive after the program is loaded, setting my 128 up on blocks and directing a large fan on it, but to no avail. The one thing that helps is directing a fan at the power supply, and I don't understand why that should be. I've taken the top off the power supply and run my system for hours, and the heat sink and the top of the transformer get only a little warm. I can't see how this small amount of heat could cause this much trouble.

Can you give me any kind of suggestion on how I can overcome this problem so I can go online without having a 10-inch fan blowing on my power supply?

—JOHN M. DEWEES
BROOKHAVEN, PA

A From what you've said, I'd suggest trying to use your modem with another 128 system and your 128 system with another power supply. If you get the same results with both of these combinations, then your modem must be drawing too much power and you should send it back for a replacement. If these combinations work fine, then your power supply needs to be replaced or you could get a Hayes-compatible modem, such as a Mercury, that comes with an external power supply. In the latter case, you'll also need an RS-232 interface, which you can get from Aprotek. Good luck!

Q *For a couple of years, I ran the Empire BBS in central New York and loved every minute of being a SYSOP. I plan on putting up another BBS as soon as I get married and am in my new house.*

What I'm writing to you about is a phenomenon we've been experiencing in this area. It seems that about three years ago there was a rash of new BBSs. At first this was great, but then usership declined. In the past year, several BBSs have shut down because of lack of use! We've tried everything to get the users back online, but to no avail. Personally, I think the area was saturated too fast, and the users are just plain bored with telecommunications. That's sad, because the SYSOPS who are still running are great people, and so much can be done on BBSs! Is this a local phenomenon, or have you heard of it before?

—ERIC MAUSER
LIVERPOOL, NY

A Not only have I heard of it, I've experienced it first hand. When I first got into BBSs, there were about four for Commodore users in all of Toronto, where I used to live. Now there are literally hundreds of them. Many have shut down because of lack of activity, but, since somebody else is always catching the BBS bug, there are always new ones opening up.

One reason there are so many these days is because it's so easy to get started. A modem that can run a BBS can cost as little as $19, and there are all sorts of BBS programs around. I imagine things in the Commodore BBS world will settle down one of these days, but for the time being, we should probably expect to have an excessive number of BBSs in a lot of areas.

BRADLEY BBS COMMANDMENTS:

#1—Be a participant in the bulletin boards you use. Some people call in, look over the message board, get information from the bulletins, download and then leave. However, most BBSs welcome feedback on just about any topic. You can get a discussion rolling by leaving one comment, question or observation. Everybody knows something that can be shared and appreciated by others. Also, treat a BBS as a place to share information when someone else needs help, as well as to get information when you need assistance. If you see a message from somebody in trouble, take the time to leave them a response.

#2—When you're on a BBS, watch the information that appears on your screen. Most systems offer plenty of instructions, so take the time to read them. You might also look in the bulletin section, where a lot of systems have a section on common questions and answers. If you still don't understand something, leave the SYSOP a message. If you never tell anybody you're having trouble, they can't help. ■

Telecomputing Workshop is a monthly column dedicated to the needs of RUN *readers who are using, or intend to use, a Commodore computer for telecommunications. We invite you to submit your questions and comments to:*

David Bradley
Telecomputing Workshop
RUN Magazine
80 Elm St.
Peterborough, NH 03458

You can leave online messages for David Bradley on QuantumLink (DavBradley), American PeopleLink (DavBradley), Delphi (DavidBradley) or via the PunterNet to 13/SYSOP or 13/David Bradley.

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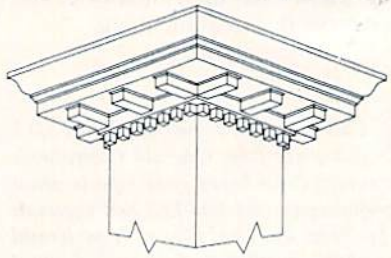

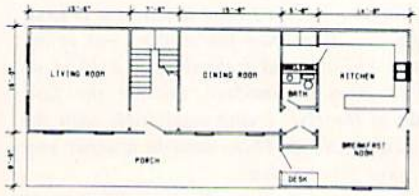

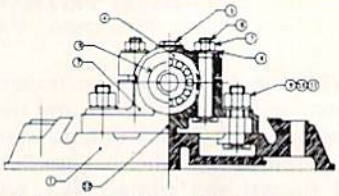

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GEOWATCH

Avoid big trouble with installing GEOS applications by reading the simple advice in this column.

By MATTHEW STERN

THIS MONTH I TURN once again to an examination of GEOS 128, this time describing how to avoid trouble when installing application programs. I'll also tell you about a geoFile update, another GEOS-compatible printer interface, a hint for using the Tymac connection and a couple of low-cost, near-letter-quality printers I hope Berkeley will support.

Application Installation

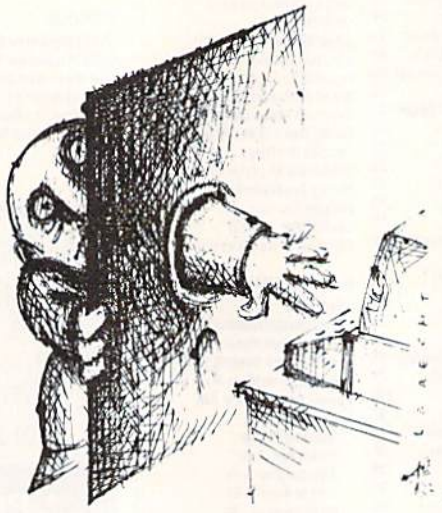
When you first boot GEOS 128, a dialog box asks, "Have you ever installed a Berkeley Softworks GEOS application product?" If you don't answer this innocuous-sounding question carefully, you'll be in a bind—unable to use any application with your GEOS program, now or in the future.

What's going on is that the original boot disk writes its serial number to the backup boot disk, which is then used for installing and running applications. The applications also get imprinted with the serial number, and an application will work only if the numbers on the backup and the application match. In other words, your applications will work only with your backup boot disk, not anybody else's. Berkeley invented this questionable scheme as a form of copy protection.

The first time you use GEOS 128, you *must* click the "yes" icon in response to this question if you have any GEOS applications or there's *any* possibility you ever will. If you click the "no" icon, you'll *never* be able to use any applications with your GEOS program.

In case you've already answered the prompt incorrectly and now have applications you can't use, there are two possible solutions. First, you can order a replacement boot disk from Berkeley for $7 and wait a few weeks for it to arrive. If you're desperate, Mystic Jim (2388 Grape, Denver, CO 80207; BBS number: 303-321-8954) sells a utility that changes serial numbers. However, this utility should be used only by the technically inclined who understand the workings of GEOS.

It's unfortunate that such an easy-to-use operating system has such a potentially disastrous installation procedure. If GEOS 128 can't offer users a second chance to install applications, it should at least display warnings and an "Are you sure?" prompt before you click the "no" icon.



Compatible Applications

Now the question arises: What applications are compatible with GEOS 128? Of course, all those written specifically for 128 mode are compatible, including Berkeley's recently released 128 version of geoWrite Workshop (formerly Writer's Workshop). This package includes an updated geoWrite 2.1 with full-page editing (in 80-Column mode) and a new Paint Overlay printer driver for saving overlaid printouts as geoPaint files. Then you can preview and print the files in geoPaint.

Most C-64 GEOS applications, including the new geoPublish and geoSpell, work with GEOS 128, but they run only in 40-Column mode. Two 64 applications that *won't* work with GEOS 128 are geoFile and geoCalc. According to Rob Siegel of Berkeley, these programs access the GEOS 64 Kernel, thereby making them incompatible with GEOS 128. Perhaps by the time you read this, 128 versions of geoFile and geoCalc will be available at your dealer.

geoFile Update

The original version of geoFile contained several serious bugs—so serious, in fact, that the program was removed from store shelves for a time. Now, according to Berkeley, the wrinkles have been ironed out in the new geoFile 1.2. If you have a geoFile 1.0 disk, send it to Berkeley and you'll get an updated 1.2 disk at no charge. For more information, contact Berkeley Softworks Technical Support, 2150 Shattuck Ave., Berkeley, CA 94704; 415-644-0890.

Input On Interfaces

In last November's geoWatch, I suggested that the ideal Commodore-compatible parallel printer interface should work with all Commodore programs and include a buffer. Now I've recently discovered that such a device exists—the Omnitronix Hot Shot Plus.

In addition to the above capabilities, this interface lets you print double- and quadruple-density graphics for a darker and better-defined image, and it offers a number of near-letter-quality fonts and a built-in editor for designing your own fonts.

Omnitronix has also released a ROM chip upgrade that enables the Hot Shot Plus to print quadruple-density graphics using geoPaint. Before, it could print only double-density from geoPaint.

The Hot Shot Plus's most useful feature for GEOS is its 8K buffer (expandable to 64K). GEOS fonts and graphics can take a long time to print, but with a large-capacity print buffer, the computer doesn't have to wait until the printer has finished before going on to other tasks.

At a suggested retail price of $100, the Hot Shot Plus costs far more than Berkeley's geoPrint Cable (which I reviewed in November). Also, depending on your print and other variables, it requires you to change switch settings between various applications. On the plus side, however, it offers printing enhancements for both GEOS and non-

GEOS programs that the Berkeley interface does not, and it doesn't force you to buy a new printer to get near-letter-quality fonts.

An alternative to the Hot Shot Plus is Omnitronix's less sophisticated Hot Shot. Priced at around $60, this interface offers one near-letter-quality font, double- and quadruple-density printing and an optional 8K buffer that's not expandable. For more information on both interfaces, contact Omnitronix at 760 Harrison St., Seattle, WA 98109; 206-624-4985.

While I'm on the subject of printer interfaces, Michael Habermann of Baltimore, Maryland, has sent in a tip for users of the Tymac Connection. He says, "Place both internal switches in the off, or closed, position, and the Tymac works fine! I've used the GEOS Okidata 92 driver with the interface and had no problems—graphics and text both print OK!"

Inexpensive LQ Printers

Not surprisingly, GEOS doesn't support daisywheel printers, since it so far prints only bit-mapped images. It also doesn't provide drivers for 24-pin dot matrix printers (unless you use them in a nine-pin emulation mode), because most of these printers have been priced beyond the range of most C-64/128 users. Now, however, NEC and Epson have each introduced a letter-quality, 24-pin printer for under $500. It's my hope that Berkeley decides to support these machines, since their improved print quality would be a real boon to users of GEOS applications. If you agree with me, why not write to Berkeley (address above) and tell them how you feel. We just might make a difference! ■

The monthly geoWatch column addresses the needs of RUN *readers who use GEOS, Berkeley Softworks' alternative operating system for the C-64 and C-128. Your questions and comments are welcome. Send them to:*

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You can also contact Matthew Stern on QuantumLink. His online name is Matt S3.

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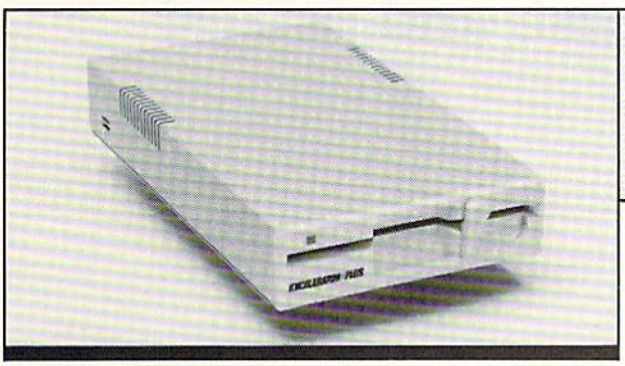

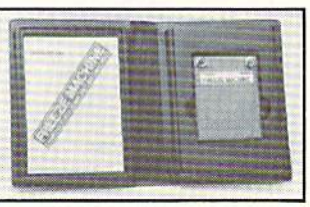

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Official Rules

1. Employees of Berkeley Softworks, Quantum Computer Services, Laser Direct, RUN Magazine, their advertising and promotional agencies and their immediate families are not eligible to enter the contest.
2. Each entry must be wholly the product of the developer in whose name the entry has been submitted. The entry may not have been published prior to this contest. Copyrighted images are ineligible.
3. Entries must be produced with GEOS or GEOS based applications (e.g. geoWrite, geoWrite Workshop, geoPaint, geoPublish, etc.)
4. Entries must be submitted in both printed output form (dot matrix or laser printed) and disk in 1541/1571 format. The following should be clearly marked on both the printout and the disk:
   A. Contestant's name, address and phone number.
   B. Occupation (optional)
   C. The GEOS based application package(s) used to create the entry
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5. Entries become the property of Berkeley Softworks, which reserves the right to adapt, use or publish all entries received. No disks will be returned, so be sure to make a copy of your entry before you submit it to the contest.
6. Deadline for entries is June 30, 1988. Mail entries to Berkeley Softworks, 2150 Shattuck Avenue, Berkeley, CA, 94704 Attn: GEOS Desktop Publishing Contest.
7. Contestants may enter multiple categories, but may only submit one entry per category per division (e.g. one entry in the Flyer category, Dot Matrix division *and* one entry in the Flyer category, Laser Printer division). Regardless of the number of categories you enter, you will only be eligible to win one prize.
8. Final judging will be performed by the staff of RUN Magazine. The decisions of the judges are final in all respects. This includes decisions regarding creativity, similarity among entries and general suitability.
9. This contest is void where prohibited by law. All federal, state and local taxes are the sole responsibility of the winners.

General Conditions

- Entries will be judged on creativity, originality, composition, layout, content and overall design.
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COMMODORE CLINIC

What are the differences between Commodore's 1350 and 1351 mice? How many files can be kept open at once on a disk drive?

By LOU WALLACE

PROGRAMMING

Q *I'm writing a program and want to keep a few files open while the program is running. How many can I keep open at one time on a Commodore disk drive?*

—D. SCHWARTZ
SCOTTSDALE, AZ

A It depends on the drive you use. 1541s and 1571s have three available buffers to open up to three sequential files at once, or one relative file (which requires two buffers) and one sequential file (one buffer). The 1581 drive has seven buffers, so you can have more combinations of open files, but it's not a good idea to have more than two relative files open at once.

Q *I'm taking a course in Basic, and the class uses MS-DOS computers. However, I want to do my homework on my C-64. The problem is Basic 2.0 doesn't have any text-formatting abilities, and I need to have columns of decimal numbers to two significant digits, with the decimal points aligned. How can I do it?*

—M. WRIGHT
ODUM, GA

A It's not too difficult. All you need is a short routine to read in a number, truncate it to two digits to the right of the decimal, and convert it to a string. Once that's done, you can add extra zeros if the number has fewer than two significant digits, and pad it with enough space characters so all the numbers have the same number of digits. This short Basic program segment demonstrates one way to do it:

```
10 PRINT "X = ";:INPUT Y
20 GOSUB 50
30 PRINT Y,X$
40 GOTO 10
50 X = Y*100:X = INT(X):X = X/100
60 X$ = STR$(X):T = X - INT(X):IF  T = 0
   THEN X$ = X$ + ".00":GOTO 80
70 T = (X*10) - INT(X*10):IF  T = 0  THEN
   X$ = X$ + "0":GOTO 80
80 FOR J = 1TO(10 - LEN(X$)):X$ = " " + X$:
   NEXT
90 RETURN
```

In this example, the program asks you for a number and converts the number to a string with the proper number of digits. It then adds character spaces to the front of the number so the output is ten characters long, with the decimal points aligned. You can change the number of zeros the program adds to a number by changing the 10 in line 80. And the subroutine at lines 50–90 could be included in your programs.

However, while writing this, I discovered a bug in both the C-64 and C-128 math routines and thought I would pass it on to our readers. Apparently it involves round-off errors in floating-point math, but only affects certain numbers, for which I haven't as yet been able to find a pattern. It's easier to demonstrate than explain. In Direct mode, type in the following lines:

```
X = 33.4
Y = (X*10) - INT(X*10)
PRINT Y
```

What do you think the value of Y is? If you answer zero, you're right, but the answer you get is 1.1920929E – 07! Not quite right, that's for sure. If you had entered – 33.4 for X, the value given for Y would have been a little less than 1, a very large error indeed. These errors are enough to cause programs to work incorrectly when they encounter one of the "magic" error-causing numbers, as in the small routine above. So be warned!

Q *How can I reprogram the C-128's shifted run key and the help key? Also, how can I keep a user from exiting a Basic 7.0 program with the stop key?*

—R. BURNS
CONCORD, NH

A The answers to both questions were published recently in the Best of Magic column in *RUN's Special Issue #4*. To disable run-stop/restore, use these Pokes:

```
POKE 792,51:POKE 793,255
```

As most 128 users know, the eight function keys can easily be reprogrammed with the Key command. But you can easily reprogram the shifted run and help keys with the following SYS commands.

```
RUN KEY
BANK 15:SYS DEC("60EC"),,8,,,"RUN KEY"
HELP KEY
BANK15:SYS DEC ("60EC"),,9,,,"HELP KEY"
```

Substitute your own commands for the words RUN KEY or HELP KEY to give you a total of ten programmable function keys.

HARDWARE

Q *While using my C-128 in C-64 mode, I formatted a disk on my 1571. The disk directory showed that I had 1328 blocks free. Does this mean my 1571 formatted both sides of the disk? I thought that happened only when you were in C-128 mode. Then, when I turned it over and tried to get a directory, it responded with Drive Not Ready. What does this mean?*

—J. P. STEVENS
EXETER, NH

A It means you've formatted both sides. Evidently your 1571 was still in 1571 mode, not 1541 mode. The 1571 can be used with the C-64, although it doesn't allow the high-speed data transfer in C-64 mode. However, you have a misconception about how the 1571 double-sided drive works. It is not the same as formatting a disk with the 1541, then turning it over and formatting it on the other side, which results in essentially two separate disks, each with its own directory. To get at the data on the back of this 1541-formatted disk, you must turn it over. However, when you format with the 1571 in 1571 mode, both sides of the disk are formatted at the same time. They share the same directory, and the drive can access the data on the back without turning over the disk. When you turned the disk over, it was

in the drive upside down and the directory couldn't be found, as if the disk were unformatted. This resulted in the Drive Not Ready error.

Q *About a year ago, I bought the new Commodore 1350 mouse, and I've been using it with programs like Pocket Writer 2 and GEOS 128. Now I hear about a new mouse called the 1351. What's the difference between them, and should I think about changing to the new version?*

—C. CALVET
GARDEN GROVE, CA

A The difference is like night and day. The 1350 really isn't a mouse, although it looks like one. In reality, it's a joystick in sheep's—er, mouse's—clothing. It's only able to report to the computer movement in eight directions, just like a joystick. The 1351 mouse, on the other hand, is a "true" mouse. It reports on movement in 256 directions. (The 1351 can also be used as a standard joystick if needed.) This makes it a perfect proportional controller, and it's one of the finest peripherals ever to come out of Commodore. With software designed to use it as a mouse, its movements are smooth and fluid. I've seen it priced at under $35—a bargain—and one I recommend.

Q *I recently received an SX-64 (an older, portable C-64 with built-in drive and five-inch color monitor). Do the comments I read about the C-64 and the 1541 drive also apply to my SX-64? Also, I was given some older programs like The Manager and The Printed Word. How do these compare with newer programs like Pocket Filer or Pocket Writer 2?*

—L. BOWLES
JACKSONVILLE BEACH, FL

A Yes, for the most part the SX and C-64/1541 are the same. The SX has a different default color on power up, though, and there may be some minor differences in the 1541 ROMs. As for the older software, if it's adequate for you, then you need nothing else. However, the newer software packages (especially Pocket Writer 2) are faster and have more features.

SOFTWARE

Q *I have a C-128, and I need to write text over the graphics screen and save it. I know the CHAR command allows you to print on the screen, but what I need is a form of text editor so I can easily do it. Do you know of any such programs?*

—J. BASTION
BOSTON, MA

A There are several C-64 graphics programs you could use. For example, Doodle! has reasonable text abilities as well as very good drawing features. Flexidraw (from Inkwell) is another, with excellent drawing tools and good text-editing features. Abacus Software has CADPAK 128, which uses the 128's 40-column graphics, and it has some text features that might do what you need. And of course there's GEOS 128, which uses both text and graphics.

Q *I have the Better Working Spreadsheet by Spinnaker. Based on* RUN*'s article on the 1764 RAM expander in the July 1987 issue, I bought a 1764. However, I can't use it with my spreadsheet because the computer locks up. Is there a way I can make it work?*

—J. SAELZLER
OREGON, OH

A Your spreadsheet program is overwriting the area of memory occupied by the RAMdisk software. Unless the software is specifically written for use with the RAMdisk and makes allowances for its machine code, there's no guarantee it'll work with it. Since the number of owners of RAM expansion cartridges is rapidly increasing, software developers are writing programs that use the expansion RAM. If you can't find a spreadsheet that works with RAMdisk, contact Spinnaker (One Kendall Square, Cambridge, MA 02139; phone 617-494-1200) to see if they're developing one that will work with the 1764.

Q *A C-128 program I'm writing needs to know what disk drive it was loaded from and the amount of memory present. Short of the program asking the user, is there a way to tell what expansion RAM is present and which drive (8–11) should be used?*

—TOM MCDUNNEL
WEST PALM BEACH, FL

A Yes, there is. You can tell what drive was last accessed with a Peek to $BA, and by placing a line at the beginning of your program that Peeks that address, you'll know what drive to default to. Here's an example.

```
10 DN = PEEK(DEC("BA"))
20 BLOAD"SPRITES", B0,U(DN + 0)
```

The variable DN is set to the drive last used, so if you load and run this program from any drive, the sprite data is loaded from the same drive.

As for checking for 17XX RAM expansion cartridges, again, a small routine at the beginning of your program can handle that for you. For example:

```
10 A = 57094:POKE A,255:IF PEEK(A)
   <>255 THEN RX = 0:GOTO 30
20 POKE A,0:A = 57088:RX = 128: IF
   (PEEK(A) AND 16) THEN RX = 512
30 REM RX CONTAINS THE AMOUNT OF
   EXPANSION RAM PRESENT
```

This short routine will return the total amount of expansion RAM available in the variable RX. If you have a 1700, RX = 128, and if a 1750 is present, RX = 512. If the system is unexpanded, the value of RX will be 0. ■

Do you have a problem or question about your Commodore computer system, software or programming? Commodore Clinic can help. Just send your questions to:

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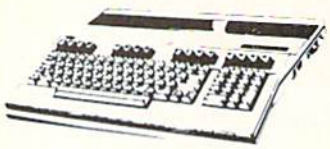

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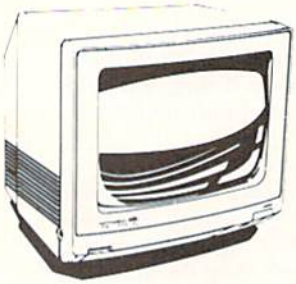

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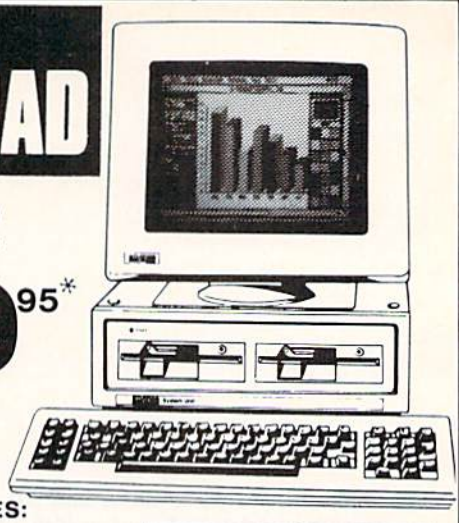

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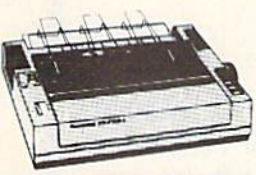

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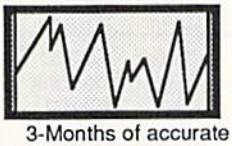

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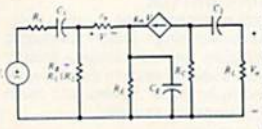

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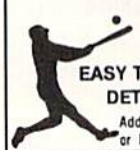

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APRIL

COMING ATTRACTIONS

USER'S GROUPS—
Called the backbone of the computer industry, user's groups are still an untapped resource for many computerists. Next month, find out what user's groups are all about as *RUN* examines how they function and the benefits they have to offer. We'll also include a list of user's groups in the U.S. and Canada to help you locate the one nearest you.

In related articles, we'll provide tips on how to start a user's group if your area doesn't have one, how to start and maintain a club newsletter and how your club can set up its own online bulletin board system.

REPAIR TIPS—
Before you send your computer equipment off to the shop for expensive repairs, you may be able to save time and money by fixing it yourself. Another April article, written by an experienced computer technician, will provide numerous tips on locating and repairing malfunctions in your C-64 system at home. If you'd still rather not do the work yourself, this information will make you better informed when you go to the repair shop.

PROGRAMS—
We're not foolin' when we say the April issue of *RUN* will offer lots of features to make using your Commodore more fun and worthwhile. For example, say good-bye to boring text graphics in 64 Basic with Fontastic 64. This program lets you choose from nine text fonts to add variety to your video display.

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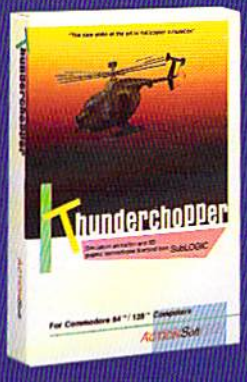

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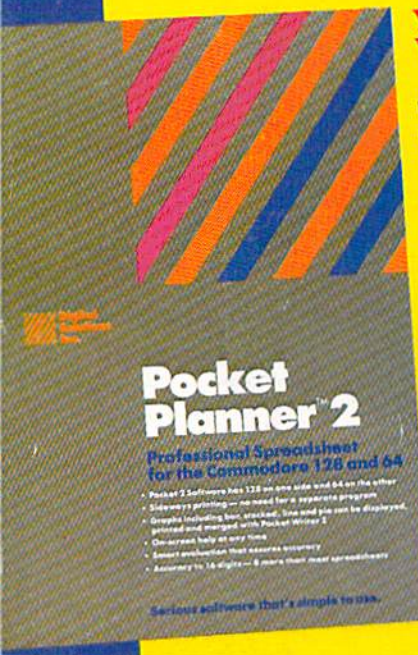

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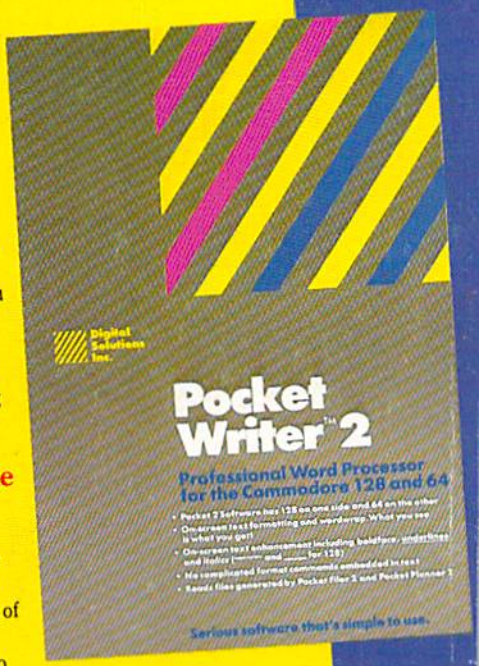

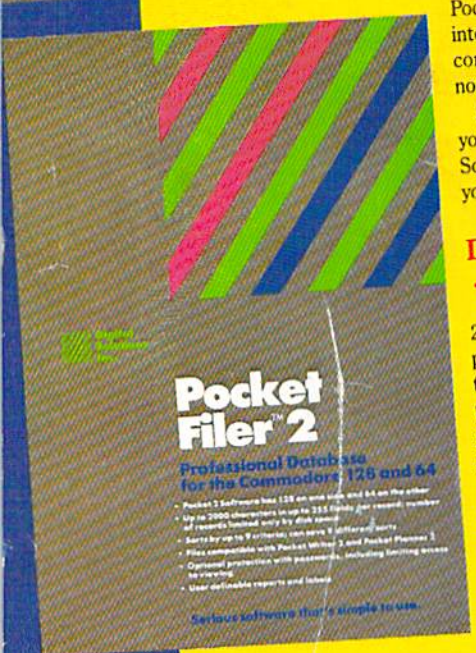

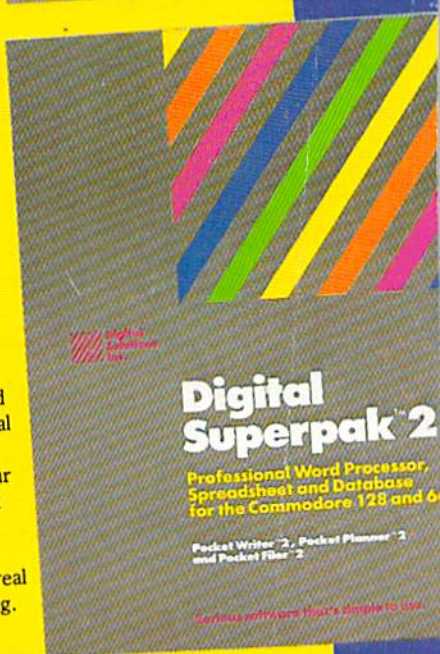

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